THE UNIVERSITY
OF ILLINOIS
LIBRARY

666.05
C
v.51

REMOTE STORAGE

Digitized by the Internet Archive
in 2019 with funding from
University of Illinois Urbana-Champaign

https://archive.org/details/brickclayrecord5119unse

The pages which are missing were removed because they were advertisements.

666.05
C
v.51

American Clay Machinery Co	75, 77
Armstrong Mfg. Co	60
Automatic Transportation	66
Baird Mach. & Mfg. Co	55
Ball Engine Co	17
Beighlee Electric Co	58
Bell Locomotive Work	52
Black Diamond	72
Bonnot Co	4
Bristol Co	57
Broderick & Bascom	49
Brown Instrument Co	11
Buckeye Traction Ditcher Co	63
Canton Grate Co	59
Celite Products Co	50
Ceramic Supply & Cons	52
Chambers Bros. Co	7
Chase Fdry. & Mfg. Co	84
Cincinnati Frog & Switch	48
Clapp, Norstrom & Riley	90
Clarage Fan Co	46
Classified Ads	88, 90
Cleveland Alloys Co	79
Cling-Surface Co	65
Cork Insert Co	46
Crescent Belt Fastener	47
Crimora Manganese Co	47
Cyclone Grate-Bar Co	53
Didier-March Co	87
Duplex Truck Co	51
Du Pont Powder Co	86
Eagle Iron Works	50
Eastern Mchy. Co	16
Elwell-Parker Electric Co	51
Engelhard, Chas	13
Exner, J. E	61
Fate Co	91
Forester, H	61
Gandy Belting Co	69
Garnet Company	79
General Electric Co	19
General Store	79
Goodrich Co., B. F	15
Hardinge Bros., Inc	48
Harris Bros. Co	89
Hettrick Mfg. Co	56
Homestead Valve Mfg. Co	79
Hook Patent Kiln Co	64
Illinois Boiler Cleaning Compound Co	49, 79
International Clay Machinery Co	8, 9
Jackson & Church Co	70
Jenkins Bros	55

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other
Tuesday by

Kenfield-Leach Company
445 Plymouth Court Chicago

Chicago, July 3, 1917

Vol. LI No. 1

Table of Contents

Can Your Mining Methods Be Improved? 30
Coal Price Cut Is Welcome News....26
Rate Adjustment and Tariff Interpretations 41
ellers Lands an Order for the New Silica Wedges....42
Something to Show Your Farmer Friend 33
"With Malice Toward None, and Charity for All"....38

The Editor's Corner....25

Machinery and Equipment....70
Pottery Notes....69
Questions and Answers....48
Straws That Show the Wind....47
The Superintendent....44
Wake of the News....53

This Issue Contains Semi-Annual Index.

K-B Pulverizer Co	48
Kissel Motor Car Co	68
Lakewood Eng. Co	67
Link-Belt Company	18
Main Belting Co	5
Manufacturers Eq. Co	6
Marion M. Fd. & S. Co	50
Marion Steam Shovel Co	57
Mathews Gravity Carrier	86
Morgan Co., F. W	46
New England Fire Cement Co	62
Ohio Galv. & Mfg. Co	82
Orenstein-Arthur Koppel	85
Osgood Co	84
Owens Continuous Tunnel Kiln Co	82
Philadelphia Textile Machinery Co	14
Potts & Co	46
Price Electric Co	54
Quaker City Rubber Co	87
Randall Graphite Sheet Lubricator Co	46
Roessler & Hasslacher	54
Rollin Chemical Co	53
Sander Instrument Co	49
Sanderson-Cyclone Drill	47
Sauerman Bros	48
Sawyer Belting Co	84
Scandinavia Belting Co	60
Schofield-Burkett Cons	85
Sero Specialty Co	49
Service Motor Truck Co	10
Smith Co., Claude	3
Standard Dry Kiln Co	58
Stock Xylite Grease & Oil Co., G. B	46
Sturtevant Mill Co	92
Stupakoff Laboratories	50
Taylor Instrument Companies	Front Cover
Thew Auto. Shovel Co	73
Thwing Instrument Co	5
Trautwein Dryer & Engineering Co	3
Union Chain & Mfg. Co	46
Veritas Firing System	61
Watt Mining Car Wheel Co	20
Webner, F. E	79
Weller Mfg. Co	2
White Company	12
Wood & Co., R. D	71
Youngstown Steel Car	59

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

13048

SEMI-ANNUAL INDEX

Vol. L — Brick and Clay Record — January-June, 1917

PAGES IN THE INDEXED ISSUES

January 2	1 to 116
January 16	117 to 208
January 30	209 to 308
February 13	309 to 400
February 27	401 to 508
March 13	509 to 608
March 27	609 to 712
April 10	713 to 812
April 24	813 to 912
May 8	913 to 1004
May 22	1005 to 1104
June 5	1105 to 1196
June 19	1197 to 1288

A

- Absorption Test 1054
- Advertisement, Denny Renton Clay and Coal Co., Paving Brick..........1052
- Advertising Brick in Kentucky........ 649
- Advertising:
  - Boosts Sales of Barkwill-Farr Co. 73
  - Glen-Gery Shale Brick Co.'s Experience 1049
  - National Terra Cotta Association Increases Appropriation 333
  - Paving Brick Association Launches Campaign 854
  - To Be Done by Lumber Association. 245
  - Urges Plenty of Advertising....... 29
- American Ceramic Society:
  - Announces Summer Meeting.......1042
  - Attendance at Annual Meeting Breaks Record 534
  - Changes Date for Summer Meeting.1217
  - Official Announcement of New York Meeting 435
  - Organizes Committee on Military Preparedness 1049
- Applegate, D. H.:
  - Eliminate Needless Expense....... 179
- Aschemeyer, F. C., Portrait........329-1030
- Association Work in Des Moines...... 29
- Atlanta (Ga.) Conflagration Fails in Attack on Brick..................1131
- Auger Bridge to Stop Lamination..... 54

B

- Barkwill-Farr Co.:
  - Holds "Tilebak" Contest........... 750
  - Offers Land for Cultivation....938-1141
  - Using Space to Sell Brick.......... 73
  - Works for Building Show......... 32
- Bauhahn, Rolf W.:
  - Joins Aviation Corps.............. 943
  - Making a Corinthian Capital...... 858
  - Terra Cotta Fitting Department... 754
- Ballou, B. W., Heads New Company... 280
- Belts:
  - Cutting Kinks 1150
  - Installation and Care of.......... 956
  - Life of Belt Effected by Length...762
  - Prolonging Belt Life, by Otis L. Helfrich 1230
- Best Reputation in Chicago........... 428
- Binns, Charles F.:
  - Efflorescence and How to Stop It.. 659
- Black, John H., Portrait..........328-1030
- Blair, Claude C.:
  - Says Association Lacks Support... 180
- Blair, Will P.:
  - Discussion on Lamination......... 963
  - Looking Squarely at the Transportation Problem 1051
- Blasting:
  - Preventing Accidents from Misfires.1239
  - Reducing Misfires Costs......... 862
  - Used in Quarrying Shale, by C. B. Willis 1044
- Bleininger, A. V.:
  - Defining the Durability of Clay Products 149
- Boiler Room Safety Device........... 55
- Boiler Scale 1239
- Bonus System:
  - Adopted by Clay Products Company 237
  - Bonus System on a Small Plant... 861
  - Development and Application of a Bonus System, by Spencer M. Duty 141
  - Experiment on Small Plant........ 657
  - Outlines Fundamentals............ 767
- Bragdon, Claude:
  - Use of Ceramic Products in the Artistic Embellishment of Buildings 40
- Brick:
  - Are You a Brick?................1223
  - Brick and Frame in Cincinnati Cyclone 745
  - Delivery Costs 1042
  - Illustrations of Brick Work........1045
  - Number Required in Circular Structures 159
  - Old Houses in Hudson Valley, by Robert W. Jones................ 939
  - Stack, Biggest in World.......... 750
  - Trouble in Cutting................1154
  - Withstands Fire Attack at Atlanta, Ga. 1130
- Brickmaking in Russia, by Alexis Zakharoff 839
- Brick Pavements:
  - Designing a Brick Pavement...... 951
  - In the Buckeye State............ 654
  - Census Shows Thru Highways Needed 1224
  - Booklet, Issued by N. P. B. M. A...1148
  - Farmers to Learn of Merits........ 536
  - To Overcome Car Shortage, by Will P. Blair...................1051
- Bridge to Stop Lamination........... 54
- Brown, George H., Portrait.......... 534
- Buckley, J. L.:
  - Cost Keeping Important.......... 27
- Building:
  - In New York........33-143-243-336-....445-541-749-846-950-1035-1147-1232 1035-1147-1232
  - Pulse of the Industry.......................56-163-257-358-459-563-662
  - Steel Holds Back Large Structural Work 278
  - Straws That Show the Wind.......................753-853-955-1038-1170-1233
- Building Business with the Motor Truck.1225
- Building Code:
  - Pittsburgh Building Code Being Written 53
  - Need for Better Building Codes... 964
- Building Figures for 1916 and 1915.... 258
- Building Strikes in Pittsburgh........ 146
- Bulletin:
  - On Iowa Clays.................. 182
  - On Operating Details of Gas Producers 354
  - On Coal Mine Clays.............. 852
- Bureau of Standards:
  - Reports on Silica Brick Investigation 937
  - Tests on Refractories............ 48
- Burning:
  - Know Your Maximum Temperature 762
  - Oil as a Fuel in Burning Sewer Pipe 560
  - Recovering Coke from Kiln Ashes.. 763-960-1155
- Business Classification of Current Legal Decisions 1043-1235
- Business Ethics:
  - Strive for Higher Standards in 1917 28

C

- Canadian National Clay Products Association Convention........183-236-452
- Car Shortage, to be Relieved by Drastic War Measure 1172
- Cartage Costs 1042
- Carson, Rufus J.:
  - Discussion on Producer Gas....... 963
- Ceramic Students Essay Contest.....43-230
- Cement Brick in the Rattler Test..... 654
- Chain Drives 861
- Chicago Face Brick Men Frolic at Annual Meeting 239
- China Clay Developed in America..... 838
- Chinaware from Southern Kaolins..... 650
- Cincinnati Association Elects Officers.. 750
- Cincinnati Brick Club Holds Annual Dinner 140
- Clay Bank Protection 160
- Clay Car Safety Device............... 54
- Clay Plants Lose Money, by E. S. Hults. 642
- Clay Products:
  - In Photographic Work........... 248
  - Durability of, by A. V. Bleininger, B. Sc. 149
  - n Engineering Construction, by E. H. Darling, M. E. 546
  - n the Artistic Embellishment of Buildings, by Claude Bragdon... 40
  - n Vermont 276
- C land Builders Hold Christmas Party 77
- (and Building Tied Up by Strike.. 634
- (and Building Strike Ends....... 938
- Clev and Commons Go to $12.50......1133
- Coal:
  - Burning Data.................... 658
  - Off-Setting the Increased Cost.....1239
  - Retailed as a Shortage Protection.1142
  - Storage 160
- Columbus Face Brick Association Discusses Credits 1138
- Common Brick:
  - In Chicago Sewers............... 429
- Competition is Keen—But Let It Be Clean, by Arthur S. Fielding...1135
- Complete Building Show:
  - Barkwill-Farr Co. Works for Show 32
  - Burned Clay Products to Have Exhibit 337
  - Help Wanted from the Nation's Clayworkers 138
  - Incomplete Building Show......... 537
  - Much of Interest at Show.......... 435
  - Views of Exhibit................. 641
  - Writing on Brickmakers.......... 48
- nventions, Encouraged by President.1232
- nventions Scheduled for 1917...........................37-153-255-333-443
- (operation Between Employer and Employe the Key to Industrial Progress, by Cleve Hartzell...... 739
- Costs in the Limelight............... 244
- Cost of Brick Houses................. 656
- Cost Accounting for the Clay Plant, by A. J. Huac...............49-249-350
- Cost Accounting:
  - Counting the Cost, by G. W. Greenwood, M. A. (Oxon)........47-147-246
  - High Cost of Ignorance, by Dwight T. Farnham..................... 340
  - Institute of Paving Brick Manufacturers Prepare Uniform System 841-1040
  - Suggestions, by Oscar Wilson...... 949
  - Uniform Cost Systems Important.. 27
- Counting the Cost, by G. W. Greenwood, M. A. (Oxon).............................47-147-246-346-449-549
- Craig, Jr., G. D.:
  - How About a Depreciation Fund?.. 541
- Crusher Rolls, Grinding...............1238
- Curing Lamination in Large Pipe and Tile, by Cleve Hartzell......... 233
- Cutting Straight Brick............... 353

D

Dabney, A. D., Portrait .42
Darling, E. H.:
  Clay Products in Engineering Construction 546
Dealer's Viewpoint, by Astrid S. Rosing 228
Delivery Costs 1042
Demurrage Ruling 76
Depreciation Fund, by G. D. Crain, Jr. 541
Detroit Brick Manufacturers Discontinue Association 540
Detroit Brickmakers Display Miniature House 155
Die:
  Proper Size for Repress 162-357
Dobhs, S. B.:
  Face Brick Exhibit 453
Drainage Conference at U. of I. 476
Drain Tile:
  Advantages of Clay Over Cement Tile, by E. H. Haeger 945
  Crack at Low Temperatures 763
  Gives Long Service 847
  Handling Large Tile 558
  Proper Depth 1052
Drying:
  Advisability of Using Exhaust Steam in Dryer 1154
  Dryer Details, by A. F. Greaves-Walker 334-439
  Notes on Waster Heat Tunnel Dryer Operation, by Otis L. Helfrich 1031
  Steam and Waste Heat Dryers on Iowa Clays 763-962
  Tile 558
Dry-pan:
  Has Excessive Power Consumption 161
Dry Press Fire Brick 766-863
Duty, Spencer M.:
  Development and Application of a Bonus System 141

E

Editor's Corner 25-137-227-327-427-533-629-737-835-935-1028-1128-1215
Efficiency in Mechanical Operation 29
Efflorescence and How to Stop It, By Charles F. Binns 659
Elevator Safety 658
Eliot, Frank Monroe:
  Joins Reserve Corps 1217
  Not Only Good Ethics but Good Business 1224
  Portrait 1029
Enameled Brick Possibilities 249
Engine and Boiler Horse Power 862
Excess Profits Tax Law 845-937
Exhibit of Jersey Clay Wares 277

F

Face Brick:
  Correcting the "Tuxedo" Front 156
  In Attractive Exhibit 453
Face Brick's Worst Evil, by Frank T. Hindman 1036
Farnham, Dwight T.:
  The High Cost of Ignorance 340
Fielding, Arthur S.:
  Competition is Keen—But Let It be Clean 1135
  Portrait 1028
Fire Brick Company Leases Big Clay Deposit 279
Fire Brick Makers Offer to Aid Government 633
Fire Brick:
  Dry Pressed Versus Hand Molded 863
  Market in Argentina 1137
First Aid on Clay Plants 55
Flag Built of Brick 1144
Foreign Trade Convention 42
Freight Rates:
  Cancelled 339
  Demurrage Ruling 76
  In Iowa 841
  Rulings 857-655-1138
  Texas Brickmakers Testify at Hearing 1173
Freight Ruling Threatens Ohio Building 1221
Freight Tariff News 376-448
Furnace Efficiency 559

G

Gas Producers:
  Bulletin 354
  Operating Details 354
General Manager, Articles, by G. W. Greenwood:
  The G. M. Gets a Bump 630
  Learns About Sales Report 751
  Has Conference With Sales Manager 848
  Gets Hung Up on a Cost Finding Problem 952
  Gets a Few Tips Concerning Financial Statements 1046
German, G. Angus:
  Strive for Service During 1917 179
Germany, Manufacture of Ceramic Ware in 1228
Glazes, Preparation of Terra Cotta 843
Goodman, Leon:
  Strive Toward Perfection 28
Greaves-Walker, A. F.:
  Dryer Details 334-439
  Leaves Sun Brick Co. 537
  Portrait 237
  Testing Clay Properties 35
Greenwood, G. W.:
  Counting the Cost 47-147-246-346-449-549
  The General Manager Gets a Bump 630
  Learns About Sales Report 751
  Has a Conference With Sales Manager 848
  Gets Hung Up on a Cost Finding Problem 952
  Gets a Few Tips Concerning Financial Statements 1046
  The Sales Manager Makes An Unusual Sale 1139
  Discusses Some New Silica Shapes 1218
  Gets Into An Argument 1219
Grinding and Screening, by Ernest W. Knapp 635
Grinding Crusher Rolls 1238

H

Haeger, E. H.:
  Advantages of Clay Over Cement Tile 945
Hammond, W. K., Portrait 539
Harbison-Walker Co., Earnings Jump 274
Hartzell, Cleve:
  Co-operation Between Employer and Employe—Keynote to Industrial Progress 738
  Curing Lamination in Large Pipe and Tile 233
  Portrait 738
Helfrich, Otis L.:
  Notes on Waste Heat Tunnel Dryer Operation 1031
  Prolonging Belt Life 1230
High Cost of Ignorance, by Dwight T. Farnham 340
Hindman, Frank T.:
  Face Brick's Worst Evil 1036
  Portrait 1028
Hollow Tile:
  In Automobile Service Stations 650
  Farm Buildings Forerunner of a New Era 44
  Used in Farm Barn Roofs, by W. G. Kaiser 1146
  Wizards Wand Raises Burned Clay City in the Heart of the Arizona Desert 38
Hollow Tile, Assn. Meeting 434-632
Hollow Tile Garden Seat 339
Home Building Campaign 936
Hood, B. Mifflin:
  A Time of Testing in 1917 28
  On Atlanta Fire 1132
Horse Power Differs in Engine and Boiler 862
Howington, James T., Portrait 942
Huac, A. J.:
  Cost Accounting for Clay Plant 49-249-350-450-551
Hudson Valley Industry, by Robert W. Jones 939
Hults, E. A.:
  Why Clay Plants Lose Money 642

I

Illinois Brick Company Earnings 434
Illinois Clay Manufacturers' Assn. Meeting 214
Institute of Paving Brick Manufacturers:
  Announcement of St. Louis Meeting 841
  Report of St. Louis Meeting 1040
Insurance to Employes, Gives Free Life 742
Insurance Board Gives Refund 277
Iowa Clay Products Manufacturers' Assn. Convention 231
Iron Pyrites in Clay and Coal 956
Italy in Need of American Brick 1217

J

Jones, Robert W.:
  An Old Industry of the Hudson Valley 939

K

Kaiser, W. G.:
  Can the Farm Barn Be Made Absolutely Fireproof 1146
Kansas Clays Abundant 857
Kier, Porter S., Portrait 633
Kilns:
  Burning Ware in a Forty-Foot Kiln 1057
  Care of Tops 159
  Cleaning Flues With Vacuum System 355
  Construction and Operation of a Thirty-six Foot Round Face Brick Kiln, by T. N. McVay 746
  Recovering Coke from Ashes 763-960-1155
  Relative Efficiency of Up-Draft and Down-Draft Kilns, by J. D. Pratt 954
King, M. L.:
  Advocates Frequent Meetings 29
Knapp, Ernest W.:
  Winter Grinding and Screening 635
Knocking:
  First Prize Paper in Sales Ethics Contest 1036
  Second Prize Paper in Sales Ethics Contest 1135
  Third Prize Paper in Sales Ethics Contest 1223

L

Labor Shortage to be Relieved by War Bill 1134
Labor a Big Problem 28
Lamination:
  Curing Lamination in Large Pipe and Tile, by Cleve Hartzell 233
  Discussion by Will P. Blair 963
  Lessened with Choker Bridge 54
Legal Decisions 1043-1235
Letter Box 179-256-355-766-863-963
Lime Carbonate in Clays 1055
Louisville to Have Army Cantonment 1221

M

Machinery and Equipment 78-184-281-378-478-579-680-787-883-981-1076-1174-1262
Maddock, A. M., Heads War Committee 1173
Marketing the Product 156-247-453-555-758-1236
Market for Brick, Foreign 639
Mars, G. C.:
  Steady Market Our Biggest Item 29
McVay, T. N.:
  Construction and Operation of a Thirty-six Foot Round Face Brick Kiln 746
Mechanical Efficiency Needed 29
Mercier-Bryan-Larkins Brick Co.'s Power Plant 30
Monmouth Manufacturers' Assn. Grows Rapidly 275
Miller, C. F., Portrait 743
Milwaukee Home and Real Estate Show 836
Mitchell, Robert C., Portrait 138
More Business Than Usual 935-1053
Motor Trucks:
  As Sales Aids 455
  Building Business With the Motor Truck 1225
  Solve Car Shortage 1072
  Something to Consider for the New Year 154
Moving Brick Buildings 455

N

National Brick Manufacturers' Assn.:
  New York Convention.......331-435-538
National Fire Proofing Co., Elects Directors 838
National Paving Brick Manufacturers' Assn. Meeting at Ann Arbor..... 650
National Terra Cotta Society to Increase Advertising 333
Nebraska Brick and Tile Assn. Meeting. 338
New Brunswick, Clay Products in...... 943
New Hampshire Brick Rates Adjusted.. 279
New Jersey Enjoys Good Year......... 37
New Jersey Clay Workers' Assn.:
  Convention 152
  Meeting at Trenton................1217
New York Commons Drop to $9.50.....1166
New York Commons Reach $9.75....... 52
New York Dealers Elect Officers....... 742
New York State School of Clayworking and Ceramics Offers Short Course in Ceramics 148
Northwestern Clay Assn. Holds Convention 345
Not Only Good Ethics but Good Business, by Frank M. Eliot.........1223

O

Ohio Bricklayers Campaign for Brick.. 634-1228
Ohio Face Brick Makers Announce New Prices 938
Oil as a Fuel in Burning Sewer Pipe.. 560
Oil Burners, Safety in Use of.........1151
O'Neil, N. P.:
  Is Strong for Open Price.......... 30
Open Price............................ 30
Oregon Clayworkers Hold Meeting..... 741
Orton, Edward, Jr., Joins Army........1030

P

Parcels Post, Shipping Brick by.......1217
Parry, W. H. Fyffe:
  Six Things to Strive for in 1917.... 29
Paving Brick Advertising.............1052
Paving Brick Cost Report..........841-1040
Pencil Clays in New Jersey........... 786
Pennsylvania Brickmaking 1217
Pennsylvania Clay Club............... 555
Pennsylvania Face Brick Makers Meet.1042
Pittsburgh Building Code Being Written 53
Pittsburgh Building Conditions......... 911
Plumb, E. F.:
  Cleaning Kiln Flues by Vacuum System 355
Plusch, Herman A.:
  Brief Historical Sketch of Architectural Terra Cotta............ 31
  General Course of an Order Thru a Terra Cotta Plant.............. 241
  From Kilns to Job................. 645
  From Pressing Room to Kilns...... 446
  Portrait 32
  Terra Cotta Laboratory Layout and a Discussion of Glaze Troubles... 842
  Testing Molding Plaster and Handling Body Clays............... 342
Porcelain for Silk Mill................ 644
Porter, Charles R., Portrait...........1029
Pottery:
  Japan as Competitor.............. 274
  Ranks Third in Mexican Industries 43
Pottery News...............69-181-272-....372-651-756-850-975-1067-1167-1257
Pratt, J. D.:
  Relative Efficiency of Up-Draft and Down-Draft Kilns 954
Preparation and Molding of Clay Ware 760
Price Cutting 29
Producer Gas:
  Discussion by Rufus J. Carson..... 963
  Discussion 864
Prolonging Belt Life, Otis L. Helfrich..1230
Pugging and Shaping Clay............ 760
Pug Mill:
  Blades 55-1150
Pulley Crown 160
Pulse of the Industry.................. 56-163-257-358-459-563-662

Q

Quarrying Shale, Use of Explosives in, by C. B. Willis.................1044
Questions and Answers................ 161-356-560-659-763-960-1057-1154

R

Ramsay, John D.:
  Refractories and Railways......... 851
Rattler Test on Cement Brick......... 654
Refractories Manufacturers' Assn. Offers to Aid Government.............. 633
Refractories and Railways, by John D. Ramsay 851
Refractories Assn. Endows Fellowship..1220
Reid, A. S., Portrait..............329-1030
Relation of Methods of Manufacture to Durability, by Homer F. Staley.. 855
Renting, Cost of......................1222
Road Limitations 948
Robb, J. W.:
  Sees Labor as Greatest Problem.... 28
Rosing, Astrid S.;
  The Dealer's Viewpoint........... 228
Russia, Brickmaking in, by Alexis Zakharoff 839

S

Sales Ethics Contest:
  Announcement 328
  Big Registration 631
  Rules Governing Contest 444
  Winners 1028
Sales Force, Injecting Harmony Into..1236
Sales Manager, Articles by G. W. Greenwood, M. A. (Oxon):
  Makes an Unusual Sale...........1139
  Discusses Some New Silica Shapes..1218
  Gets Into an Argument...........1219
Salt Glaze at Low Temperatures....... 765
Salt Glaze on Soft Shale.............. 356
Schlake Shows Chicago Brick Rise Slight 1234
Screens, Twin Piano-Wire............. 353
Scumming 659
Second Class Postage Bill..........34-1128
Selling:
  Injecting Harmony Into the Sales Force 1236
  Spicy Suggestions for the Sales Manager 158-248-454-556
Sewer Pipe:
  Burning 560
  Shall the Clay Pipe Manufacturer Fight Fire with Fire?.......... 347
Sewer System in Chicago............. 428
Short Course at Alfred................ 330
Sick Benefit Association for Clay Plants 739
Silica Brick, Bureau of Standards Makes Report on 937
Simpson, H. B., Portrait.............. 555
Slacker Salesman 247
Smoke and Gas from Plant Objected to 356
Society for Testing Materials to Meet..1052
Southern Tile Manufacturers Organize.. 741-942
Staley, Homer F.:
  Relation of Methods of Manufacture to Durability 855
Steam Shovel Record.................1150
Steel Holds Back Large Structural Work 278
Stoneware:
  Curing Blisters 765-962
  Has Trouble with "Sweating"...... 161
Stove Lining Plant..................... 543
Straight, H. R.:
  Mechanical Efficiency Needed....... 29
Straws that Show the Wind........... 753-853-955-1038-1170-1234
Stroup, Hal B., Portrait..............1229
Superintendent 54-159-353-558-657-760-861-956-1054-1150-1238

T

Tariff Commission Appointments....... 857
Terra Cotta:
  Advantages in Using Architectural Terra Cotta, by Herman A. Plusch, M. S. Cr. E...................... 151
  Brief Historical Sketch of Architectural Terra Cotta, by Herman A. Plusch, M. S., Cr. E.......... 31
  Fitting Department, by Rolf W. Bauhahn 754
  From Kilns to Job, by Herman A. Plusch, M. S., Cr. E............ 645
  From Pressing Room to Kilns, by Herman A. Plusch, M. S., Cr. E... 446
  General Course of an Order Thru Plant, by Herman A. Plusch, M. S., Cr. E. 241
  Laboratory Layout and Discussion of Glaze Troubles, by Herman A. Plusch, M. S., Cr. E............. 841
  Making a Corinthian Capital, by Rolf W. Bauhahn................ 858
  Panels in McAlpin Grill............ 145
  Wants Solution to Problems........ 561
  Testing Molding Plaster and Handling Body Clays, Herman A. Plusch, M. S., Cr. E............. 342
Testing Clay Properties, by A. F. Greaves-Walker 35
Testing Materials Society to Meet......1052
Testing Molding Plaster and Handling Body Clays, by Herman A. Plusch, M. S., Cr. E.................... 342
Tests on Clay Materials Available in Illinois Coal Mines.............. 852
Thawing Frozen Water Pipes.......... 160
Transfer Truck 1151
Transfer Cart 559
Trunk Display Samples.............659-960

V

Vacuum Cleaning System for Kiln Flues 355
Valve Identification Tags............. 658

W

Wage Systems 767
Wake of the News...58-165-260-361-461-....565-665-769-869-966-1058-1156-1241
Western Paving Brick Manufacturers' Assn. Meets 237
West Virginia, Clay Products in....... 841
What Shall We Strive For Most During 1917 26-27
Willis, C. B.:
  Use of Explosives in Quarrying Shale 1044
Wilson, Oscar:
  Cost Accounting Suggestions....... 949
Wilson, T. E., Portrait................ 555
Wisconsin Clay Manufacturers' Assn.:
  Announcement of Convention....... 232
  Report of Convention............... 332
Wizard's Wand Raises Burned Clay City in the Heart of the Arizona Desert 38
Workingmen's Homes Built of Brick... 443

Z

Zakharoff, Alexis:
  Brickmaking in Russia........... 839

REMOTE STORAGE

The EDITOR'S CORNER

Coal Prices and Freight Rates

TWO EVENTS have taken place since we last went to press which hold considerable of interest to the clay products manufacturer. One of these is the agreement of bituminous coal mine operators to reduce the price of their product as much as $3 per ton, the other is the decision of the Interstate Commerce Commission in the fifteen per cent. freight rate increase case.

It has been very aptly stated that fuel is one-third the cost of manufacturing clay products. Any decrease, therefore, in the price of this commodity is welcomed by the clayworker who sees in it a possibility for reducing costs and taking off at least a part of the present burden. There is no denying that the price of brick generally is high when compared to prices only a few years ago. The reason for the unusual increase in prices has for the most part been due to constantly advancing wage scales and unwarranted high fuel prices. We think it can be truthfully said that almost without exception, clay products manufacturers have been justified in any upward revision they may have made in their price lists. The fact that they were justified, however, has not prevented the movement from getting under way of withholding building operations until a reduction in prices shall take place. If lower fuel costs will enable the manufacturer to furnish the builder with his material at a lower price than has been the rule during the past months, there will be no further excuse for the withholding of many proposed projects and building will again proceed in normal volume to the benefit of all concerned. This phase of the situation is very encouraging, to say the least.

The Interstate Commerce Commission in refusing to grant the railroads the blanket increase of fifteen per cent. in rates came as a surprise to many. The car shortage situation, together with the strong plea on the part of the carriers as to the heavy additional expense levied upon them by the Adamson law, convinced a great many people that the railroads would get most of what they were asking in the way of increased tariffs.

Upon investigation, however, the commission found that the railroads have been enjoying a prosperous business which has brought them much revenue, so much so, that they are not in anything like the dangerous financial condition claimed, nor in the desperate state of affairs so insistently predicted by the carriers. Those that have been hit heaviest by increased operating costs have been bolstered up by the granting of a fourteen per cent. advance.

Speaking from a national standpoint, the denial of the railroads' plea for the fifteen per cent. increase in rates by the Interstate Commerce Commission will be a big factor in helping to keep building material prices within bounds.

We may be too optimistic—we would rather be accused of that than of being too pessimistic—but we believe that things are picking up. An eastern writer says that the worst is past in the matter of declining building activity. We believe this is true, and look for a change for the better within the next few months.

* * *

"Knocking" Knocked Out

WITH THIS ISSUE the last of the prize-winning papers in the sales ethics contest is published, and in a few days nearly everyone interested in the sale of clay products, especially face building brick, will have had an opportunity to read the remaining arguments set forth against the pernicious habit of casting aspersions detrimental to the particular business in which the mud-slinger is engaged.

The authors of the four winning papers in the contest have swung hard at what has been called the worst enemy of the face brick business. "Knocking" has just received the worst punishment to which he has ever been subjected. His opponents, however, have not been satisfied with giving him a good drubbing—they have forced him to take the "count." He has been "knocked cold," and we, who have read the four masterly arraignments of him, can still imagine that we hear the referee counting.

Messrs. Hindman, Fielding, Eliot and Porter have covered the subject very completely. They have set forth the harm that knocking works upon the customer, the salesman, and the company. Knocking fills the customer with distrust, and antagonism, not only toward the particular salesman involved, but to all salesmen handling the product in question; it lowers the standard of the salesman, harms his character, and if persisted in, will financially and socially ruin him, and it costs the salesman's employer large sums of money in lost orders and good will, to say nothing of the loss of what might otherwise have been a valuable man.

This contest has demonstrated one thing very clearly, and that is, a wholesome discussion of any evil connected with business is an effective antidote for that particular poison. A few more of the papers that have been received in this contest will be published at later dates and when these have appeared, plans will be made for another contest, taking for its subject another evil.

COAL PRICE CUT

Some Relief from Swiftly Mounting Production Costs Is
Conference to Reduce Bituminous Coal Prices as Much

ACTION of considerable moment to clay products manufacturers was taken in Washington, D. C., on June 28, in a history-making conference between the coal mine operators, the committee on coal production of the National Defense Council, Secretary of the Interior Lane and J. Franklin Fort of the Federal Trade Commission. The coal operators, after a three days' session agreed to place in the hands of a committee of their own choosing the power to assent to any maximum price which three officers of the government might name. The latter have the right given them by the coal operators to fix whatever maximum price they choose and the coal men unanimously consented to this arrangement.

OPERATORS QUOTE TEMPORARY REDUCED PRICES

"Representatives from various states were asked to quote the minimum price at which they could furnish coal," says the "Black Diamond" in publishing a special message from its representative in Washington. "The Clearfield district of Pennsylvania agreed to cut its price for coal as it was loaded at the mouth of the mine from $5.25 to $3, with $3.50 for lump sizes. Tennessee came down from $4.50 to $3. Virginia did likewise. West Virginia reduced the current contract price from $5.60 to $3, and Illinois and Indiana reduced their prices to $2.75 for steam coal and $3.50 for the domestic sizes. Northern Illinois, Assumption and Murphysboro coals, owing to their excessive mining cost, will be permitted to ask fifty cents per ton more than the balance of the state. Alabama, which mines under difficult conditions, with special expenses, reduced its price from $5.50 to $3 at the lowest and $4 at the highest. Maryland lowered its estimate from $5.75 to the standard figures. All the remaining districts east of Illinois that were represented also agreed to the new figures except one or two with special conditions, which were deferred for further consideration. Only the districts west of Illinois—Iowa, Wyoming, Colorado, Oklahoma and the southwest—which were not represented, remain yet to be counted, and there is no doubt whatever in the minds of the coal committee of the Council of National Defense that these districts will agree to the price reduction.

"These figures met the entire approval of Chairman Peabody, his colleagues, of Secretary Lane and Commissioner Fort. In several instances they discussed frankly the situation in certain districts with the representatives from those districts while asking for lower figures, and in each instance they met the hearty co-operation of the operators. Mr. Peabody explained also that in line with the promises he had made in the open sessions of the convention he would, if request were made to him to do so, see that the standard price was altered to allow for special conditions, if his views carried with the other government agencies, and that any increase in labor costs would also be allowed, pending, and afterward also, the permanent price fixing that will be undertaken as soon as careful investigation of costs has been accomplished."

The prices do not apply to coal for export or for bunkers, and, of course, do not affect contracts or sales made before July 1.

C. E. Maurer of Cleveland told the committee he believed the mines could produce 600,000,000 tons of coal this year, adding if there were ample car facilities "we could cover this country with coal, and that would control the prices."

SEES IMPROVED CONDITIONS

William B. Colver of the Federal Trade Commission said infrequent employment was badly disorganizing the miners. He said the commission's plan for government pooling of the output would make possible steady employment, fair compensation to labor and capital, and more equal distribution and staple prices. He declared the supply of coal in the northwest, which is supplied ordinarily by rail and lake shipments, is diminishing gradually until now the stock is less than 100,000 tons and that a calamity is impending.

The practice of many railroads of hauling shipments of coal an unnecessary distance before turning it over to a connecting road was blamed by the witness for much of the difficulty of the coal situation.

Commissioner Fort told the committee the war has affected labor at many mines and that he had suggested to the secretary of war that means be taken either thru congress or otherwise to inform the miners of the country that their services are more needed at the mines than in the trenches.

AGREE TO RESOLUTION

The resolution giving "assent" to fixing of maximum prices was reported by Commissioner Fort from a special committee. He said he believed the resolution was entirely safe for the conference to adopt and that any responsibility as to the legality of the fixing of the prices was put on the government, and not on the operators, under the terms of the resolution. The resolution, after pointing out that a great national emergency now exists in the nation's fuel supply and that the coal operators and miners desire to closely co-operate with the government, reads:

"Resolved, That it is the sense of this meeting that a committee of seven for each coal producing state and an additional committee of seven appointed by the representatives of the anthracite industry be appointed by the representatives of each state now attending this convention to confer with the secretary of the interior, the federal trade commission and the committee on coal production of the council of national defense, to the end that production be stimulated and plans be perfected to provide adequate means of distribution, and, further, that these committees report forthwith to the secretary of the interior, the federal trade commission and the committee on coal production of the council of national defense, costs of and conditions surrounding the production and distribution of coal in each district, and that these committees are authorized in their discretion to give assent to such maximum prices for coal f. o. b. cars at mines in

is WELCOME NEWS

Anticipated as a Result of Steps Taken at Washington as Three Dollars at the Mine, Effective on July First

the various districts as may be named by the secretary of the interior, the federal trade commission and the committee on coal production of the council of national defense."

The resolution was unanimously adopted. It was a revision of a former resolution recalled because of fear that question might be raised as to the legality of the operators agreeing upon a price, even tho at the instance of the government, Attorney-General Gregory having sent word that R. Colton Lewis, special assistant attorney-general, who has conferred with the operators, had no right or authority to outline what the government's policy might be under the anti-trust laws in connection with price fixing.

CUT PRICE EFFECTIVE JULY 1

The second resolution directing the conference committee to proceed immediately to fix a tentative price without waiting for ascertainment of costs, was adopted virtually unanimously. It authorized the secretary of the interior, the federal trade commission and the defense council committee on coal production "to forthwith issue a statement fixing a tentative maximum price, which, in their judgment, is fair and reasonable as applied to the several coal districts, at which coal shall be sold from and after the 1st day of July and until the accurate costs have been ascertained and a fair and reasonable price based thereon fixed by said government agencies."

As the conferences were closing Secretary Lane paid a tribute to the operators for their manner of responding to the call upon them.

"This is a distinctly novel proceeding," he said. "You are pioneers in a good move. I hope that you will be looked upon, not only by those who succeed you in the coal business, but by the industries of the United States with respect and admiration for the manner in which you have acted at this conference. You have responded as to a call by the people of the United States. You are not a removed class. You are business men. You belong to the people. You have shown sympathy with the people and understanding of your relation to them. That is everything in a democracy.

"I think you have reason to be proud of what you have done. If all the industries of the United States will make the same effort there will be no questions as to whether our people can mobilize our resources."

* * *

Railroads Denied Fifteen Per Cent. Increase in Freight Rates

The Interstate Commerce Commission on June 29 denied the plea of the railroads of the United States for a horizontal increase of fifteen per cent. in freight rates.

The commission indicated its willingness to increase class rates in the eastern district approximately fourteen per cent. Since about one-fourth of the freight handled is moved under class rates, the decision virtually allows the eastern lines about four per cent, increase in gross freight revenue. Increases sought in rates on coal, coke, and iron ore will be granted.

The commission merely suspended the other proposed tariffs until October 28, but it indicated that no rehearing of the case will be of value at this time and suggested cancellation of the tariffs.

The class rate advances which were granted apply to ten lines north of the Ohio river and east of the Mississippi. They were as follows:

First class, from 78.8 to 90 cents per hundred pounds; second class, from 68.3 to 79; third class, from 52.5 to 60; fourth class, from 36.8 to 42; fifth class, from 31.25 to 36; sixth class, from 26.3 to 30.

The commission found in general that the effects of the Adamson eight hour basic day and of the increased cost of fuel, supplies, and materials had not affected the southern and western carriers as greatly as it affected the eastern carriers.

ROADS NOT WAR PRICE VICTIMS

The commission found, as a result of extended hearings, that the carriers generally show a substantial and increasing financial prosperity and that they have ample resources with which to conduct transportation.

Little sympathy was given the arguments of the roads that they were victims of war prices, the commission holding that the carriers have profited by the mobilization of troops.

The commission find that the gloomy forecasts of jeopardized incomes, seen by railroad officials early in 1917, have not been borne out by the figures available for later months. The proceedings were brought in March, when the returns from February were being made. February was one of the worst months in railroad history. The subsequent months have shown increasing revenues, while expenses have, in many cases, failed to mount to the extent the carriers' officials feared.

The decision points out that carriers' comparisons have been made largely with those of 1916, which was the banner year in railroad earnings, and adds that the 1917 income might be considerably diminished without necessarily indicating a danger point in earnings.

Commissioner Harlan in a concurring statement declared that should the next few months show that the railroad men's fears were well founded, the commission would be ready to grant relief. He also made a plea for better equipment and service.

Commissioner McChord, dissenting, urged that the commission report to congress the essential facts disclosed and ask that an investigation be made to determine whether prices demanded of the carriers for fuel and supplies are reasonable under present conditions. He also intimated that government control of these commodities might afford relief.

* * *

Senate Passess Preferred Shipment Bill

The priority shipment bill was passed by the Senate on Saturday, June 16. This bill authorizes the president, during the war with Germany, to order the railroads to give preference to shipments of food and all other kinds of material, when in his judgment it is necessary to do so for the successful prosecution of the war.

As finally accepted the bill authorizes the president to issue orders "direct or thru such person or persons as he may designate for the purpose" and provides that the carriers shall maintain an agency in Washington, in order that there can be prompt compliance with the orders of the chief executive. The bill further permits the railroads to enter into agreements for a "proper division of earnings," subject to the president's approval.

Provisions in the bill providing for compensation by the government of the railroads for damage incurred in carrying out the president's directions were stricken out.

The Reed amendment, which was adopted, is as follows:

"The Interstate Commerce Commission is authorized, after proper investigation and hearing, to require the various railway companies of the United States engaged in interstate commerce to provide with all possible dispatch sufficient cars and equipment to promptly move and transport all traffic tendered them, and it is hereby made the duty of said railway companies to comply with such orders when so made."

* * *

Beville of Barkwill-Farr "Forks Over"

J. M. Beville, in charge of the "Tilebak" department of the Barkwill Farr Co., Cleveland, was nonplussed the other day when he received his entire pay in the new denominations of currency. At the beginning of the year he had made an agreement with his wife to give her all the new money he got during the year. He was a good sport, however, and gave Mrs. Beville his entire pay when he got home. It was a good thing he did, tho, for "Bob" Mitchell had heard about the agreement, and fixed it with the cashier, not failing to call up Mrs. Beville and tell her what to expect, and, if need be, what to demand.

OH WIFEY DEAR! I'VE RESOLVED TO GIVE YOU ALL TH' NEW MONEY I GET IN MY PAY THIS YEAR.
JANUARY-1st-1917
CASHIER
ALL NEW MONEY, MISTER BEVILLE.
?
WILLIAMS

* * *

New Members for Southern Tile Association

An additional 100,000 tons of annual production capacity is lined up for admission to the recently organized Southern Hollow Tile Association, according to the report of the membership committee of the association, made at the meeting held in Birmingham, Ala., on June 21. This meeting followed the directors' meeting on the preceding day. President James T. Howington, of Louisville, Ky., who is general manager of the Coral Ridge Clay Products Co., was in the chair at both sessions.

Plans for the work of the association were gone into in considerable detail and the man who will be chosen as the permanent secretary and traffic representative of the organization was virtually decided on. He will be an importation and is looked to to give the association important and valuable service. Just at this time the tile companies are so crowded with business—most of them oversold, in fact—that the immediate need of publicity and educational work, as well as advertising, is not marked. This is altogether satisfactory since the association executives believe that the work can be carried on better than ever later on when there has been a sizeable surplus accumulated in the treasury.

The meetings were well attended with all of the member companies represented. Several of these reported likely prospects and definite announcement was made that the following companies, as soon as they begin manufacturing hollow tile, which they are now preparing to make, will make formal application for admission to the association: Columbia Clay Co., Columbia, S. C.; the Georgia-Carolina Brick Co., Augusta, Ga., the Standard Brick Co., Macon, Ga., and the A. G. Kahn Brick Co., Selma, Ala. Initial membership in the association represented a production capacity of 200,000 tons annually and the four new members named will add fifty per cent. to this amount.

* * *

Charles J. Deckman Resigns

Charles J. Deckman, one of the most prominent men in the paving brick industry, resigned on July 1 from the position of vice-president of the Medal Paving Brick Co., Cleveland, Ohio. Mr. Deckman, according to an announcement of his resignation sent out by the Medal Paving Brick Co., resigns in order that he may enjoy the rest of which thirty years of activity in the paving brick industry, in which he has been one of the pioneers, entitles him. Mr. Deckman, however, still retains his interests in the Medal company and his advice and co-operation will always be at its service.

* * *

War Orders Add More Than Three Billion Rail Ton-Miles

Reports from railroads controlling 51 per cent. of the country's mileage show that the railroad war board's conservation campaign resulted in the transportation over these lines of 3,354,000,000 more ton-miles of freight in April than they carried in the corresponding month of 1916. In announcing this accomplishment on June 29, the board declared it was equivalent to adding 35,000 miles to the nation's road facilities.

"This result," said Chairman Harrison, "was accomplished with the movement of but 4.3 per cent. more locomotive miles and 5 per cent. more freight car miles, resulting in an increase of sixty-six tons, or 10.4 per cent. per train and 2.4 tons, or 10 per cent. per loading of cars, equivalent to the addition of 126,000 cars to the equipment of the roads reporting.

"The drive the board is making to get railroads and shippers to make every freight car do the work that two did before the war, is having telling effect. Reports received by the board indicate prompt acceptance of its suggestion for loading freight cars 10 per cent. in excess of their marked capacity."

⁂

Death Claims Prominent Superintendent

Death wrote the closing words to the last chapter of an illustrious career in the clay products field when, on June 17, its laid its heavy hand upon J. Wannamaker, at his home in California. Just previous to his death Mr. Wannamaker was superintendent of the plant of the Grand Rapids (Mich.) Brick Co. For months, altho refusing to surrender his post as superintendent, Mr. Wannamaker had been failing in health, each succeeding day bringing him closer to the Great Divide. However, he was finally forced, by his rapidly ebbing vitality, to discontinue his work and return to his home in California, where, just a few days after his arrival, he expired.

Mr. Wannamaker was well known to clay products manufacturers thruout the United States, and during his many years of activity in directing the work of clay products manufacturing plants, he acquired a very complete knowledge of the manufacture of practically every type of clay product. He started in the brick business in Pennsylvania, where he originated, it is said, the now popular "iron spot" brick, made by the addition of manganese to the clay. From here he went to Baltimore, and after a few years spent at this point he went West. He was superintendent of the Ballejo (Cal.) Brick & Tile Co., and later was in the employ of the Anaconda (Mont.) Copper Mining Co., in its brickmaking plant. Previous to his association with the Grand Rapids Brick Co. he superintended the operations of the new plant of the Barron Brick Co., at Roanoke, Ill.

⁂

BIG CROWD ATTENDS MEETING *of* NEW JERSEY CLAYWORKERS

THE SUMMER MEETING of the New Jersey Clay Workers' Association was held at Trenton, June 29, with afternoon and evening sessions. The gathering was well attended, a total of about seventy-five members and others prominent in the industry from different parts of the country being present, many of whom took active part in the discussion of the interesting and instructive papers which were read. Following a short business session, the program included seven different addresses on subjects of current and pertinent interest to those in the ceramic industry. At six o'clock an informal dinner was served for members and guests of the association at the Trenton Country Club, to which the party was conveyed by automobiles. This provision for the intermission in the sessions was thoroly enjoyed by those partaking of the hospitality of the association, indicating the appreciation of members and guests for the efforts of the local committee in charge.

The meeting was conducted by President August Staudt, of the Perth Amboy (N. J.) Tile Works, recently elected to office. Charles A. Bloomfield, past president, and member of the legislative committee, was present at the speakers' table during the meeting, making able motions and suggestions for the future conduct of the organization at the business session. In connection with the business before the association, it was brought out that the majority of the members desired to change the date of the annual meeting from December to January or February, the consensus of opinion being that the first week in February would be the most opportune time. It was decided to hold the 1917 meeting at Rutgers College, New Brunswick, N. J., in December, as provided by the constitution, and at that time either postpone the session until February or approve such date for future conventions.

COMMITTEES APPOINTED

A nominating committee of three members, to arrange for the nomination of future officials of the association, taken up at the last meeting in December, 1916, was appointed, including Phaon H. Swalm, Howard Bloomfield, and John F. Hutchins. It was voted that a committee be appointed to serve for a year to engage actively in securing new members. Andrew Faltz, C. A. Faltz, G. H. Brown, Malcolm McHose, and Samuel Bedson will comprise this committee. A committee of ten was appointed to solicit contributions from members to provide adequate funds for the publication and distribution of the proceedings of the association at the last meeting. This committee will consist of C. S. Maddock, Charles H. Cook, R. K. Bowman, Abel Hansen, Otto W. Will, Herbert Sinclair, N. W. Moore, Fred Whitaker, E. C. Stover, and I. G. Fisher.

An interesting topic was brought up by Mr. Bloomfield, referred to at the December meeting, covering the appointment of a committee to act with Dr. W. H. S. Demarest, president of Rutgers College, to confer with the state legislature for an appropriation of $10,000 for the extension of the study and research department of ceramics at the college. Mr. Bloomfield said: "We now have at New Brunswick a small department for the clayworking industry for the state of New Jersey; the state of Illinois did not think it out of the way to expend from $125,000 to $150,000 for a kindred purpose, and the clays of that state are hardly what the New Jersey clays are. We have clays here for all purposes—from the most common brick to the finest material for pottery, yet we have possibly the most insignificant department in the United States." A committee of four was appointed for this work, comprising C. A. Bloomfield, J. H. Leisner, A. M. Maddock, and Charles H. Cook, with President Staudt and Secretary George H. Brown, of Rutgers College, acting as ex officio members. Resolutions were adopted on the death of C. P. Edgar, one of the active and most esteemed members of the organization, to be drafted by Mr. Bloomfield and Ray Minten.

DIGEST OF PAPERS PRESENTED

The papers presented with digest follow:

"American Pottery Materials," by George H. Brown, Rutgers College, New Brunswick. This paper covered the pres-

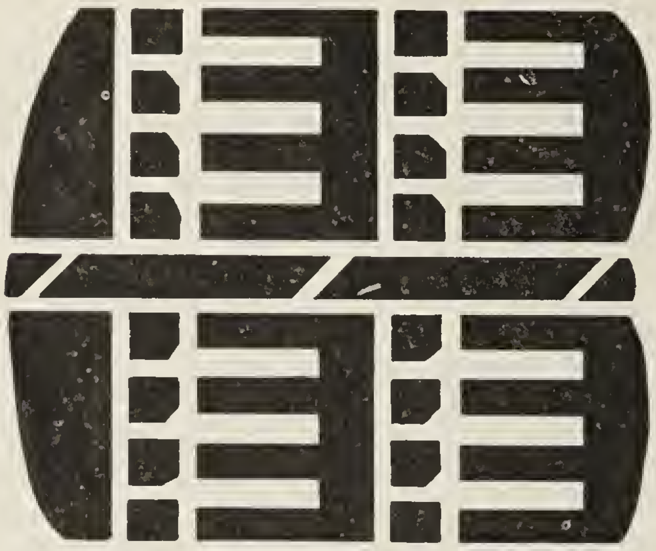
(*Continued on page* 64.)

CAN YOUR MINING METHODS *be* IMPROVED?

Some Suggestions Concerning the Winning of Clay Below the Surface of the Earth, Looking Toward Lower Costs

Staff Article

A COMPREHENSIVE TREATMENT of the subject of mining methods employed to win various earthy materials of commercial value will not be attempted in this article. Its purpose is to present, in a simple and clear manner, some of the methods employed to mine clay and other materials, the winning of which requires mining methods which might be employed in the exploitation of the material in which we are interested.



One System of Room-and-Pillar Mining Which Is Used Extensively in Coal Mining Practice

The value of raw clay is considerably less than that of coal or iron ore, and for this reason many methods employed in mining the latter substances may not be at all applicable to the winning of clay. There is, however, a marked similarity between some of the systems employed to mine coal, clay and iron ore, and it is well to be acquainted with all processes used, so that a principle of one may be readily applied in another whenever such an application is practical.

POSITION OF VEIN DETERMINES METHOD

Underground exploitation may be classed under two heads:

(a) Where mineral outcrops at surface.

(b) Where mineral lies beneath surface and does not outcrop.

In such cases where the veins or beds outcrop at the surface the material is mined according to one of the following ways: (1) By sinking a shaft or slope in the vein and following its dip. (2) By a shaft in the foot or hanging wall and cross-cuts driven to the vein. (3) By an adit or tunnel from the lowest point at which the vein crops. (4) By a tunnel thru the country rock from the lowest point available in the adjacent valley.

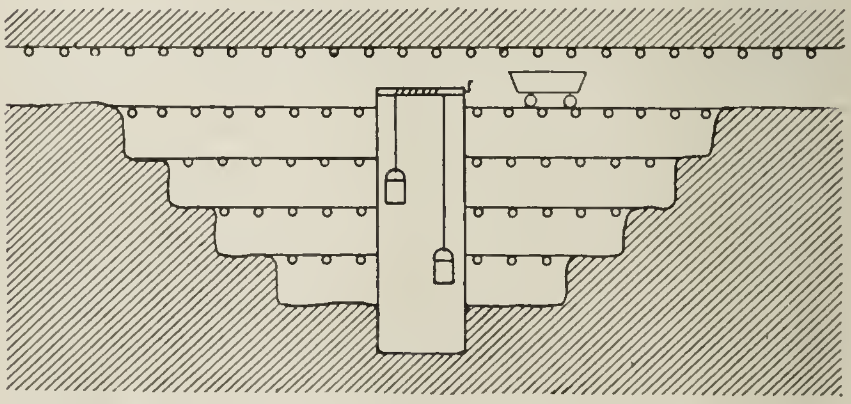
A shaft, properly speaking, is a perpendicular opening to a mine. A tunnel or adit is an opening into a mine with sufficient grade to make it self-draining. Any other opening into a mine must have some angle between the two mentioned, and is called an incline or slope.

An incline follows the dip of the vein, and hence it is in the mineral itself. For this reasons inclines, like adits, when in the ore, may pay all or part of the expense of opening. An incline may follow the vein thru its various dips and angles, thus remaining in the ore and exploring the deposit thruout its entire length.

One advantage of an incline over a shaft is that pockets and special self-dumping arrangements are more easily constructed and maintained at the head of an incline than at the head of a shaft; and, as in metal mining, since much of the material is brought to the surface in skips, this fact alone has caused the incline to be adopted, rather than the shaft, in many localities. A disadvantage of the incline is that water is difficult to remove.

CLAY OUTCROP PRESENTS SIMPLEST PROBLEM

The simplest problem in underground mining is met with where the clay outcrops at the side of a hill, and the vein is nearly horizontal. This allows of the cheapest means of winning the clay where quarrying is impossible. In such a case the material is simply taken out and a tunnel formed as the excavation continues farther into the vein. The tunnel may or may not require lining, this depending upon local conditions. In a few cases the material may be hard enough and the overlying strata rigid enough to make lining of the tunnel unnecessary. These cases are, however, few and far between, and safety at least requires a good secure tunnel lining. The size of the tunnel cut will depend largely upon local conditions and character of the stratum in which the material is located. Timbering is the cheapest form of tunnel lining



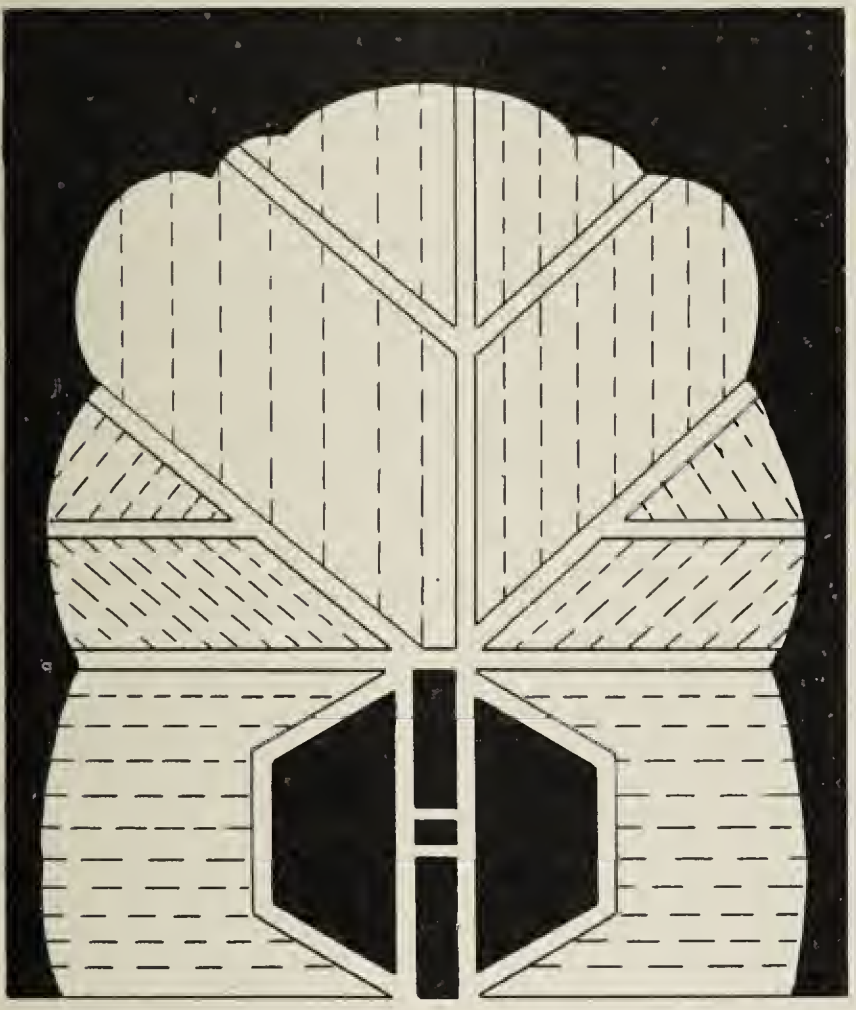
When the Underhand Stoping System, Illustrated in this Drawing, is Employed the Material May Be Extracted At Once, Without Waiting for the Shaft to Be Sunk Farther for this type of mine. The above method of mining is employed extensively in the fire clay mines of Pennsylvania, and is the cheapest method of mining clay whenever it is applicable.

Shaft mining is used quite extensively, and is employed whenever two or more veins are encountered, or when the entry cannot be driven directly into the outcrop. Thus when a vein of mineral occurs some distance beneath the surface and does not outcrop a vertical shaft is sunk and tunnels are driven thru the vein from the point where the shaft intersects the material sought for. Coal and ores of various metals must frequently be won by shaft mining.

SYSTEMS OF EXPLOITATION

In general there are three methods of removing materials from underground workings:

(1) By chambers and permanent pillars, in which the removal of the mineral is incomplete, part being left in the form of supporting pillars, or pillars and floors. This method has several names applied to it, depending upon the locality where it is used, some of which are room-and-pillar system, pillar-and-chamber, or bord-and-pillar system.

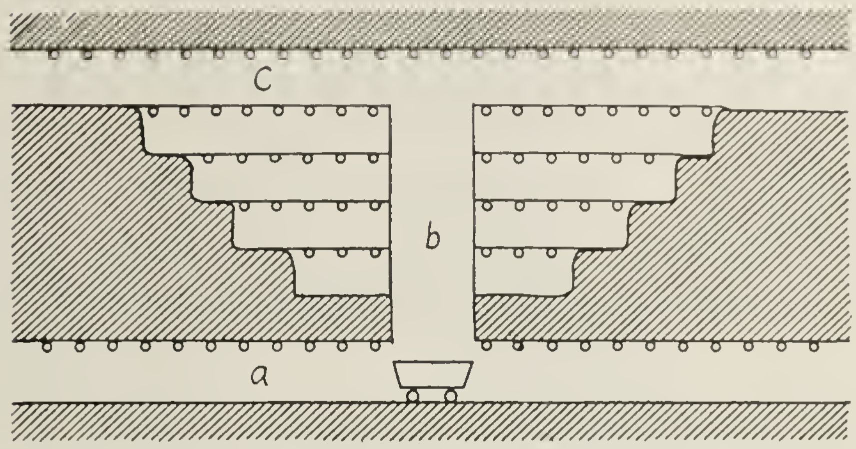


No Part of the Seam of the Deposit is Allowed to Remain, Except in the Vicinity of the Shaft, When the Longwall Method of Mining Is Used. The Dotted Lines In the Drawing Above Show Temporary Roadways to Face of Deposit

(2) By the subsidence of roof, or "caving in" method, also known as the longwall method, in which the removal of the mineral is complete with the subsidence of the roof.

(3) By the stoping-up methods, in which the removal of the mineral is complete, the empty spaces being filled up with rubbish.

The first method is extensively employed in coal mining. Several long tunnels are driven, radiating from the shaft into different parts of the vein. From these main tunnels entries are driven into rooms from which the material is taken. In forming these rooms large pillars varying in size according to the condition and properties of the mineral are left standing. The rooms also vary in size according to conditions, but are generally about 90 x 150 feet. In working this type of mine explosives are generally used to loosen the material, altho mining machines find a wide application. Several plants in Canada employ the room-and-pillar system to win their clay, but it is hardly probable that they could use mining machines to advantage, because of the excessive wear on the teeth of the machine.

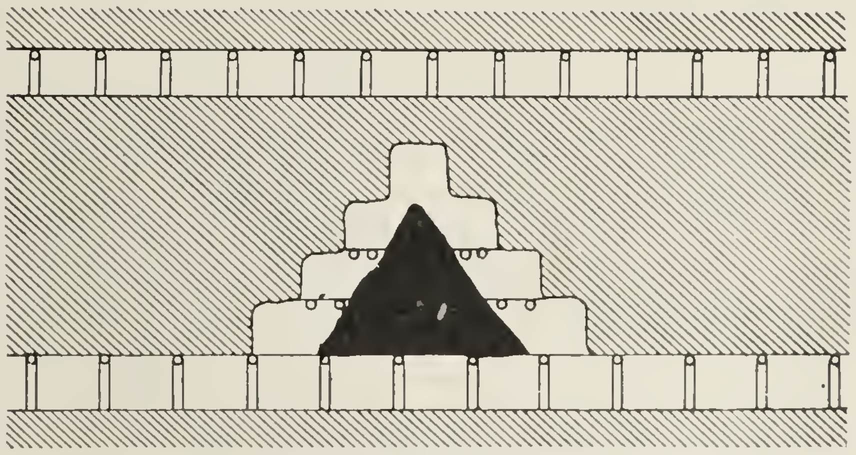


In the Cornish Method of Underhand Stoping a Level Is Driven Beneath the Point Where the Stope is to be Started, Permitting the Material to be Thrown to the Lowel Level

MINING FLAT DEPOSITS

The second, or longwall method, is employed in several places in the United States to mine coal. This method is only applicable to flat deposits, which are fairly deep underground, and where roof conditions are favorable. No part of the seam is allowed to remain after leaving the vicinity of the shaft. The method depends upon producing a uniform and gradual settlement or subsidence of the roof a few yards behind the working face.

Longwall mining may be worked by either of two methods, advancing or retreating. In longwall advancing the mining begins at or near the foot of the shaft and advances outwards, forming a gradually widening and increasing length of face to the boundary of the mine. Passages are made thru the waste material, which has been placed in the excavated portion of the mine, the waste consisting of the refuse secured in mining or from material brought in from the surface, forming pack walls at intervals, which support the roof. The roof settles on these packs, until subsidence is complete. By the settlement of the roof much material is thrown down without the use of explosives, thus reducing the cost of mining materially.



In the Overhead Stoping System, Used Largely In Ore Mining, Waste Material is Allowed to Fall on a Large Platform and the Coal Dropped to the Tunnel Below. No Hoisting Is Required Except From Level to Surface

In longwall retreating, entries are driven to the boundary of the mine, the face opened at that point and worked back to the shaft. In this method considerable expense is involved before the face is reached and full capacity obtained.

The advantages of the longwall method are that, when applicable, it is cheaper than any other system of mining and requires the least amount of explosives. Ventilation is accomplished easier and with better results, a shorter haulage for a similar output per man is obtained, more men can be employed, and the amount of timbering required is materially less than in any other system.

UNDERHAND AND OVERHEAD STOPING

The third method of mining is the overhead and underhand stoping systems. Underhand stoping consists of choosing a suitable point to work from and cutting out a block six feet or more long, to a depth of about six feet or more. This gives the first stope floor. From this floor work is continued each way, leaving the tracks and timbers, if any exist, overhead until a sufficient distance has been run to allow room for cutting out the next (No. 2) floor. Work then goes on simultaneously on both floors, each way, in such a manner that No. 2 floor will always be about six feet behind the upper floor, until sufficient space is gained on No. 2 floor to permit sinking it to No. 3 floor, which will be about the same distance below No. 2 floor as the latter is below No. 1. In this manner the work proceeds until the next level is reached or the mineral gives out. To work the different floors platforms are laid upon stulls placed across the stope in the manner shown in one of the accompanying sketches. At first the material may be tossed from one floor to the next above, and so on up to the main level, where it is thrown into a car and drawn out. As the stope deepens it will be necessary to use a windlass or some portable hoisting machine for removing the material from the lower floors.

Some of the advantages to be gained in using this method are that the material may be extracted at once without waiting for the shaft to be sunk farther, the work of drilling and picking is much easier than in the overhead stoping system, and when the roof and loose material is secured there is less danger of falling of rock on the men.

The chief difficulties met with are, first, the work of raising the water to a higher level is comparatively costly; second, a great deal of lumber is required and not recovered, and, third, the danger due to the falling of the platform is great.

CORNISH METHOD OF STOPING

The Cornish method of underhand stoping, as illustrated in an accompanying drawing, consists of driving a level (a) beneath the point where the stope is to be started. The shaft connection (b) is then made by raising from the lower or sinking from the upper level (c). This "winze" permits the material to be thrown to the lower level, and also drains the stope thoroly. The work of cutting the floors and breast begins at the top of the winze and proceeds as in the former method of underhand stoping, except that the material is rolled or allowed to slide to the winze, thru which it falls to the level below. It may be allowed to fall into a car at the bottom of the winze and trammed to the shaft for hoisting. By using this system of mining better ventilation is obtained, water is disposed of without extra pumping, and the cost is consequently lessened. The chief disadvantages are that steep stopes have to be met with and much timber is required.

Overhead stoping is accomplished in several different ways. The method used frequently is to construct a winze, or raise, and form an inverted stairway as the raise progresses. The material is won from overhead, as shown in an accompanying illustration. The waste material may be allowed to fall on a large platform which forms the roof of the tunnel or passageway and smaller platforms are constructed at the different stopes, from which the men can work. The advantages of this system of exploitation are, first, no hoisting of the material is required except from level to surface; second, no pumping water is required; third, not as much timber is required as in underhand stoping, and, fourth, gravity helps in breaking the rock. On the other hand, such disadvantages as a greater danger, due to the falling of the roof, are met with than in underhand stoping. However, as the miner is always close to the roof he can test its strength by tapping, and if it sounds hollow he can knock off the insecure rock. Secondly, more inconvenience in drilling is met with since up-holes are hard to drill.

The overhead and underhand systems of stoping find wide application in the mining of various ores. Altho there may be no clay mine resorting to these methods of mining, a knowledge of them would be invaluable to many clayworkers who obtain their raw material by underground mining.

Estimated Pennsylvania Production for 1916

While no official figures have been rendered on the amount of various grades of building brick made in Pennsylvania last year, it is estimated that nearly 130,000,000 red face brick alone were made by twenty-seven plants, and that in the Kittanning district, where buff and gray brick are produced, the output of the seven plants aggregated close to 25,000,000. The car situation was a serious handicap with mostly all manufacturers.

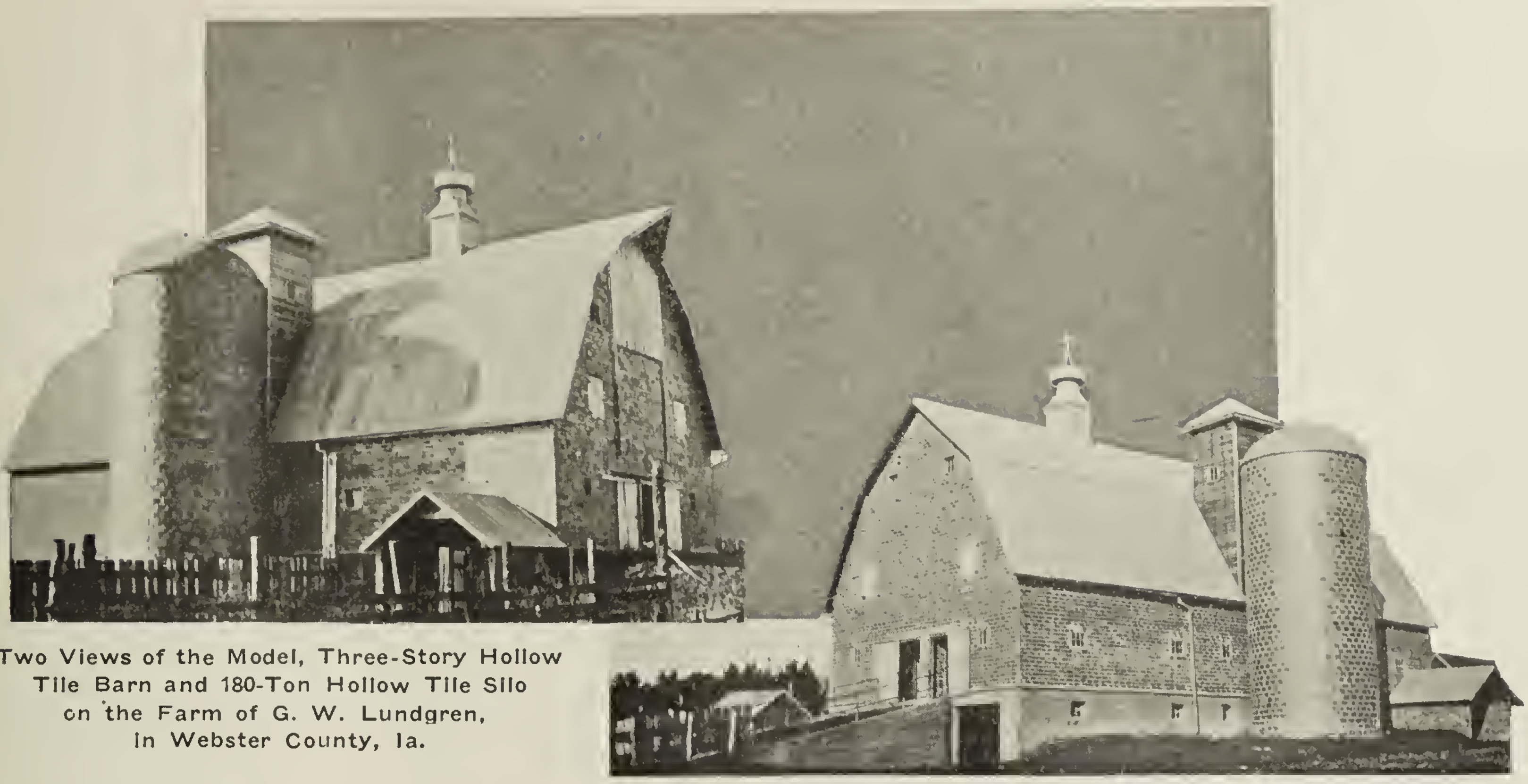
Changes Due in National Defense Council

There is to be a general reorganization of the Council of National Defense, according to a well founded rumor current here, writes our Washington (D. C.) correspondent. This will include a reorganization of the government's war purchasing system. According to the report there will probably be only ten committees of the council, instead of about 150, as at present, which has led, it is believed, to much confusion.

Out of the reorganization probably will come a purchasing office, which will direct all government purchases, and in all likelihood allied purchases as well. Under the office, it is said, would be two branches, one for raw materials and the other for the finished products.

The suggestion has been made that the ten committees, instead of being under the advisory commission, which will continue as at present, would report direct to the council. Not only would their functions be more clearly defined than at present, but their work would be coordinated to an extent that would permit the council membership to keep closer in touch with their activities.

There seems to be a strong feeling among officials that the new purchasing system will develop finally a movement to protect individual purchasers of the country against arbitrary price raisers as a result of heavy government demands.



Two Views of the Model, Three-Story Hollow Tile Barn and 180-Ton Hollow Tile Silo on the Farm of G. W. Lundgren, In Webster County, Ia.

SOMETHING *to* SHOW YOUR FARMER FRIEND

If you are a hollow tile manufacturer, you no doubt have long been looking for the plans of a model three-story farm barn built of hollow tile, which you could show to your prospective customers. In this article is described one of the most modern barns in the state of Iowa. Two of the floor plans from which it was constructed are presented, as well as end and sectional views and photographs of the structure as it appeared when finished. This article also brings in the hollow tile silo.

EACH SUCCEEDING YEAR sees a more general adoption of burned clay hollow building tile as the standard and most economical material for the construction of farm buildings. The seven million American farm owners are rapidly being brought to a realization of the fact that it pays to build well and, as a result, buildings which a few years ago would have been constructed of flimsy unsafe materials are now being erected to defy the ravages of time, fire and flood.

The age of unsafe building on the farm is slowly but surely being drawn to a close and in its stead is dawning an era of permanent, fire safe, beautiful, and sanitary buildings—of hollow tile. In this transition, which has been brought about by the need for greater care in the storage of foodstuffs and in the housing of farm animals, is created a market for the manufacturer of hollow tile which is unlimited in its scope and possibilities, and the rapidity with which a complete change from flimsy frame to permanent hollow tile construction on the farm is effected is largely dependent upon the activities of the manufacturers of the latter material in acquainting the nation's farmers with those qualities which make their product peerless for use in farm buildings.

It meets every requirement of the farm structure—because of its dense structure acquired in its baptism of fire, it is both sanitary and durable, the blankets of air which protect the inner wall from atmospheric conditions make it warm in winter and cool in summer, and it is fire safe and beautiful. The virtues of masonry, or hollow tile, construction on the farm are very well stated by no less an authority than the Iowa State College in a bulletin which it recently issued, which states:

"Masonry (hollow tile) is the more durable of the building materials in general use, and in connection with the development of more stable agricultural methods in Iowa, the farm buildings should be built as permanently as practical. Again, masonry construction is, under most conditions, the most sanitary. It may be more thoroly cleaned than construction from materials subject to decay or rapid deterioration. Masonry materials are furthermore fireproof, and the loss on farm building in Iowa is great and should be guarded against as far as possible."

When it is considered that a masonry, or hollow tile, farm building can be erected at a cost but slightly above that incurred in the construction of a frame building of similar design, and is for generations after free from upkeep expense, it is not to be doubted that the burned clay product will soon be the predominating building material used on America's farms.

Four of the Seven Horse Stalls on the Second Floor. Note the Litter Drop in the Lower Right Hand Corner and Also the Hollow Tile Corn Crib in the Rear

What might almost be said to be the last word in farm barn construction was written when G. W. Lundgren erected the immense three-story, hollow tile barn and silo shown in the accompanying photographs, three of the plans of which are reproduced herewith. In presenting these plans, together with the photographs of the finished buildings, *Brick and Clay Record* is offering to the hollow tile manufacturers something of actual, tangible value which they may use to point out to a prospective customer who is not familiar with hollow tile construction, the phenominal development of farm buildings which is taking place in the "Hawkeye State"—data from which a hollow tile barn can actually be constructed. The pictures at the head of the article are of the barn which was built from the plans shown, altho a careful examination will reveal some changes which have been made in the course of construction. Reference is particularly made to the construction of the silo roof and to the method which has been employed to tie up the "big jug" with the barn by means of the chute.

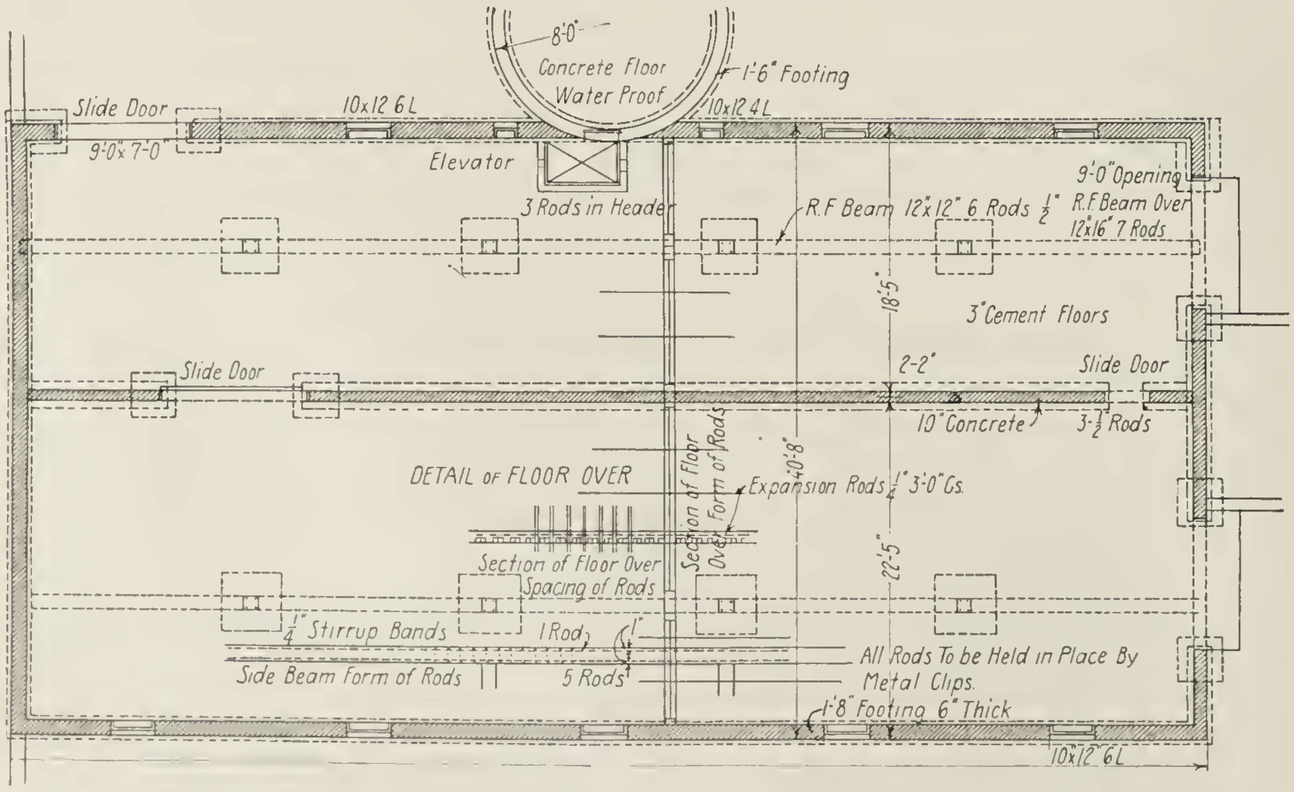
ABOUT 13,500 TILE USED IN BARN

The barn, in which, it is estimated, 13,500 tile have been used, measures 40x80 feet, is fifteen feet high from the ground to the eaves, and fifty feet to the ridge. It contains three stories, the first of which is used to house pigs and loose cattle, the second, divided into two parts, contains the horse and cow stables, and the third comprises the hay mow. The barn is electrically lighted thruout, the power being furnished by thirty-four cell batteries. Water is pumped to troughs on the first and second floors under air pressure obtained by the use of a gasoline engine. Connected to the east side of the barn is a hollow tile silo, 40x16 feet, which has a capacity of 180 tons.

A ten-inch solid concrete wall, resting upon substantial concrete footings, extends up to the floor of the second story, from which point it is constructed of hollow tile, eight inches in thickness. Above all of the windows and doors, the tile is filled with concrete and re-enforced with angle irons. The barn has a self supporting roof, which is covered with a corrugated iron roofing, and rests upon two courses of brick which have been laid upon the tile.

The first floor of the barn is divided into two parts, as shown in the accompanying plan, one of which is used for housing pigs and loose cattle, and the other, for the present, as a storage place for farm machinery. The floor of this story, which might really be called a basement, is of solid concrete, four inches thick, and is sloped to facilitate the work of washing it out. Plenty of germ-killing sunlight is admitted thru five windows on each side and three large doors to bathe the lower floor daily. Chutes run directly from the hay mow on the third floor to the basement, thru which the feed is dropped for the cattle.

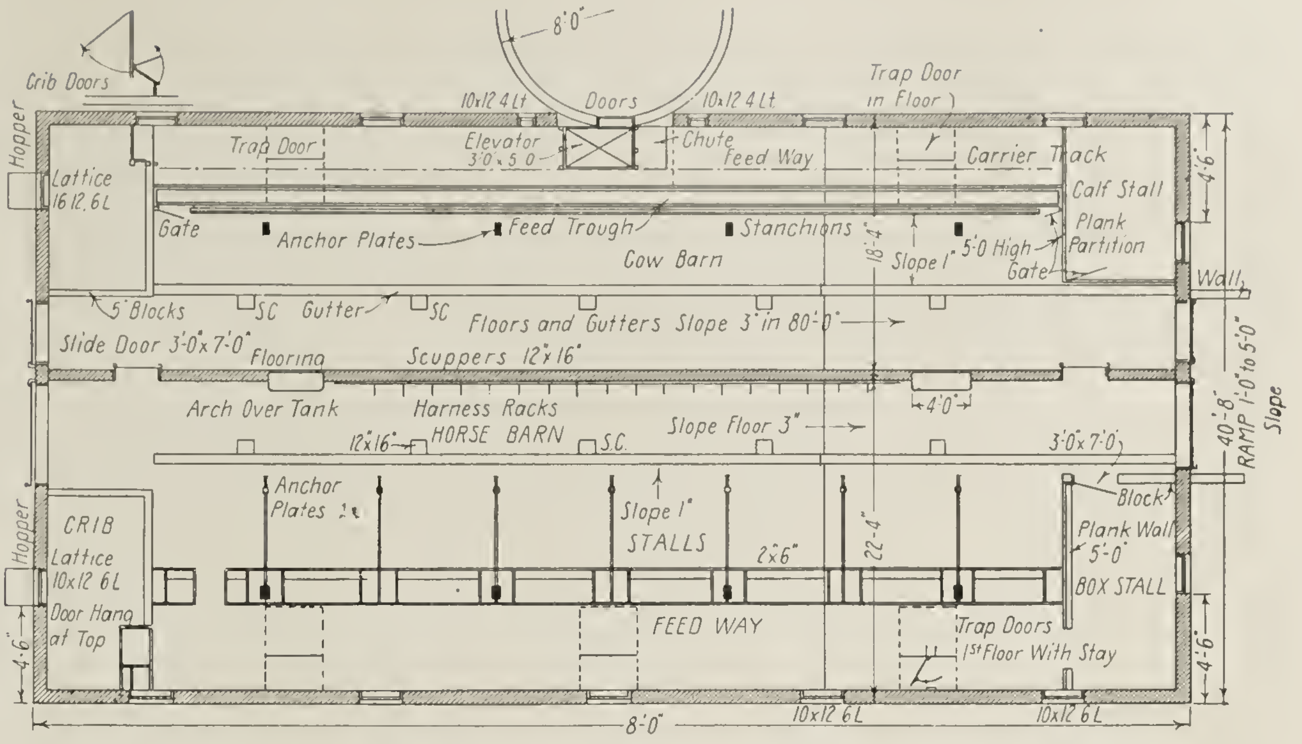
The doors, which are nine feet wide, are sufficiently large to permit a manure spreader drawn by three horses to be driven into the basement at one end, loaded with the litter of the animals on that floor as well as that which has been dropped from the floor above thru litter-drops, and be driven out thru the door on the other end.



First Floor Plan of Model Three-Story Hollow Tile Barn and Lower Portion of Hollow Tile Silo

HOLLOW TILE PROVIDES SANITARY FLOOR

Eight twelve-inch concrete columns, rising from substantial footings sunk into the ground to the same depth as those which support the barn wall, form the support for the floor of the second story. The construction of the floor used in this story is unusual, especially in this type of building. Five-inch concrete slabs, separated by rows of 5x8x12 hollow tile, resting upon the ten-inch concrete wall, form the floor foundation, over which has been laid a solid four-inch blanket of concrete. This gives a floor which has perfect insulation from the heat or cold from be-



Second Floor Plan, Showing the Arrangement of the Horse and Cow Stalls, Box Stalls, and Feeding Alleys, and Hollow Tile Corn Crib

low, and which is at all times dry and sanitary and decay-proof.

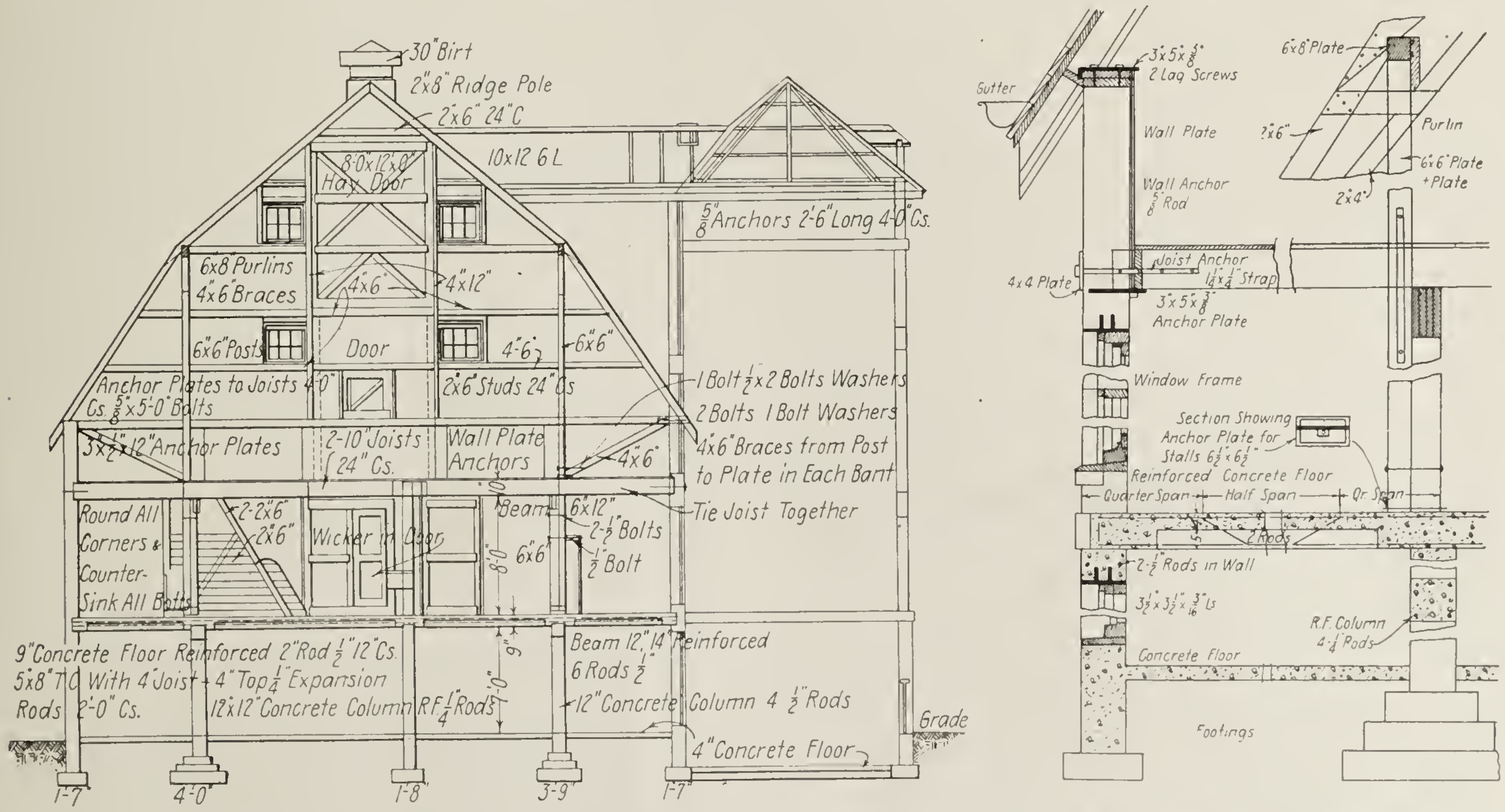
This story, like that below, is divided by a ten-inch hollow tile wall into two parts, one of which is given over to the horse barn, while the other forms the cow stable. Two sliding doors, three feet wide, are built into the dividing wall and provide convenient passageways from one side to the other. The floor of both the horse and cow stalls is sloped one inch toward the center of the barn, while the entire floor slopes three inches toward the south end. Directly behind the stalls, at intervals of about eight or ten feet, holes have been provided thru which the litter is dropped to the floor below. Metal covers are placed over these holes when the cleaning operation has been finished. In the northwest corner of the barn has been built a hollow tile corn crib, 8x10 feet, which has a capacity of 300 bushels. Trap doors in the floor of the hay mow are placed directly above the feed alleys in both the horse and cow stables, and provide a very convenient feeding arrangement.

The roof of the barn is self-supporting, and is of a type which is being used in the construction of the majority of barns being erected in Iowa. Its self-supporting feature eliminates the need for pillars and supports, and gives a free, open mow. It is constructed by joining two sixteen, one eighteen, and one twelve foot 2x6-inch rafters, in the form of a hip, to a 2x8-inch tie, or ridge, rafter. The 2x6 roof rafters are placed two feet apart, and are covered with sheathing, over which is laid the corrugated iron roofing. The roof is capped with two thirty-inch ventilators. The hay is taken into the mow thru an 8x12-foot door which is raised and lowered over the opening by means of weights and steel tracks, and is distributed thru the mow by a hay fork which runs along a track suspended from the ridge rafter. Four doors are also provided, two at each end, for taking hay out of the mow.

MODEL TILE SILO

The silo, which really forms a part of the structure, is of hollow tile construction thruout. The foundation is of hollow tile covered with concrete, as is also the floor. The roof of the silo is of self supporting tile, over which has been placed a coating of concrete. The feed is taken from the silo and distributed to the different floors of the barn thru a forty-five foot elevator shaft, in which is operated a gravity elevator. Drainage is provided for both the barn and silo by a string of five-inch burned clay drain tile.

The total cost of the barn and silo is unknown, its owner,



Elevation Showing Framework of Barn and Silo, and Cross Section Views of Barn Walls. These Drawings Have Been Made From the Plans Used in the Construction of the Barn Pictured at the Beginning of This Article

who also acted as chief builder, having failed to keep an accurate record of expenditures. However, he is confident that its cost is but little over that of a frame barn and silo of the same design, and asserts whatever excess there may be in initial cost will rapidly be made up by the decreased cost of upkeep and repair. Instead of a barn in which deterioration, and, consequently, repairs, would begin when the carpenter had driven the last nail, Mr. Lundgren has erected a structure which will last for generations to come—a monument to his good judgment and foresight.

Iowans Issue Hollow Tile Garage Booklet

Another evidence of the very commendable work being done by the Permanent Buildings Society, of Des Moines, Iowa, to increase the use of hollow building tile, especially on the farm, has come to us in the form of a very beautiful and well compiled booklet, entitled "The Garage Book."

Unlike other publications issued by this progressive society, of which Matt. L. King is secretary, "The Garage Book," is not limited to the farm, but covers the subject of garage construction from the standpoint of both farmer and city automobile owner.

In all, it gives a perspective view, floor plan and sectional view of ten low-priced hollow tile garages, and accompanies each drawing with a very short description of the garage, and a statement of the amount of material required in its construction. It also includes construction details for hollow tile garages, in which is shown, in sectional views, the methods employed in laying the tile.

Thruout the entire sixteen pages, the value of permanent construction is emphasized. "No residence should be built of fuel," states "The Garage Book," and inasmuch as the garage houses the most valuable property in proportion to the size of building, outside the home, it is essential that it should be built of fireproof material.

In driving home this point, however, the booklet by no means overlooks the other qualities which make hollow tile an ideal building material. Its low first cost, its heat insulating qualities, its beauty with either a face brick or stucco exterior, and its fire-resisting qualities are all given mention in a very concise summary appearing on the last page.

Beg Your Pardon!

Cambridge, Mass., was given as the location of the Leonard Brick Yard, in an item which appeared under Massachusetts, "In the Wake of the News," of June 19 issue, page 1249. Robert A. Parry, of the Parry Brick Co., Boston, Mass., writes under date of June 25, stating that all of the members of his company have been life-long residents of Cambridge, but cannot remember any such brick property as the Leonard Brick Yard at that point. Investigation has disclosed this yard to be located at Cambridge, Md., instead of Mass.

* * *

A change in the ownership of the Buda (Ill.) Brick & Tile Co. was published on page 1158 of the June 5 issue. It was stated in this news item that M. B. Kitterman, of Tiskilwa, Ill., formerly proprietor of the plant, had sold it to Lewis and George Sweet, both of Buda. It has developed, however, that the purchasers of this plant were not as above stated, but were Howard J. Lewis and his sister, Anna M. Sweet, residents of Buda, Ill. These last mentioned parties were previously engaged in the coal and dray business for eleven years. The services of W. E. Green, who has been head burner and setter in the Buda plant for more than thirty years, will be retained. Mr. Lewis himself is an experienced clayworker, having pursued this vocation not only in Illinois, but also in California. Mrs. Sweet is a china painter, and has a large size kiln, which will be moved to the yard.

The new owners have announced their intention to build an office and install some new machinery in the near future at the plant.

GOTHAMITES BELIEVE *the* WORST *is* PAST

FIFTY MILLION DOLLARS is not much—when you say it quickly in old New York—but just the same there are folks in this town who have a hard time trying to look pleasant as they peruse the building reports for the first half of this year 1917—and all because the metropolitan outlay for building construction is pretty close to fifty million dollars less than it ought to be or would be if it wasn't for Kaiser Wilhelm and his crazy ideas of dominating the world and New York along with it. *Brick and Clay Record* readers will recall the rosy outlook that folks in this quarter of the globe looked upon along about January 1. It will easily be remembered that the writer of those reports, during the latter part of December, 1916, and the fore part of January, 1917, was optimistically chronicling the good deeds of the past and the promises of the big things for the future—and let it be known here and now that the scribe was not "looking at shavings through green goggles" or making "mountains out of mole hills" when he was doing the recording. He was sleeping then with one eye open and with his ear to the ground and catching all that was going, but things are different now.

Times have changed. A lot has happened in the short six months just ended. Among other things, the "Kaiser had to buck in the traces"; President Wilson had to set Uncle Sam's mighty engines of war after the scrappy Wilhelm; the Liberty Loan had to be floated, and the Red Cross drive had to be put on its feet. All of these things had their effect on the building and real estate development of New York.

KAISER KNOCKS BOTTOM FROM BUILDING MARKET

About the time the Kaiser took it into his head to get gay is when the bottom in the New York building business began to get weak. And ever since it has been acting very much like the vessels that have come into contact with the infernal U-boats. The U-boats haven't sunk everything that floats and England is not starving by a jug-full, but nobody in the brick and clay, building construction, or any other industry is taking a pleasure trip to Europe this year either. The building business has not stood still, is not going to stand still and is not groaning or complaining, but builders in the metropolitan district for the first half of the year have filed plans for an outlay of approximately $71,000,000 which, as compared with $113,655,000 for the corresponding period of last year, shows a falling off of $42,000,000. Add to this the small sum of $8,000,000 for an estimated excess in new work for 1917 over that of 1916, which should have been, and you have the $50,000,000 falling off that has made it so hard for some folks in the building game to smile in these strenuous days.

But New York is on the map for all this. "In the war to protect homes and country, Liberty Bonds are starting a new wave of home-buying," says the New York "World," which goes on to show that there is more than $200,000,000 available in the metropolitan district for home-buying. But buying a home is not helping the construction business. It shows, tho, that in war time people are inclined to look upon real estate as a safer investment than some other investments that might be mentioned. It shows also that there is hope for the building business and there is yet a chance that before the year ends there will be a spurt that will be helpful in bringing this year's figures a little closer to those of last year.

The "Record and Guide" recently declared that "in the building and allied trades considerably more optimism prevailed now than has been noticed for some time and that the feeling is increasing that the worst of the depression in the building situation has passed and that from now on, all other things being equal, conditions will improve substantially."

New York is fully alive now to the fact that the United States is at war. The refreshment booths on the Gay White Way closing at 1 a. m., the soldiers, Red Cross nurses, Liberty Bond placards, American flags, and the high cost of everything you eat or drink have all helped convince the happy-go-lucky Gothamite that war is all General Sherman said it was and then some. But if that wasn't enough the figures compiled by the F. W. Dodge Co., Bradstreets, the "American Contractor," and "Engineering News," showing the reaction in the building business thruout the country, were a clincher. It shows an average decrease of thirty per cent for the past two months and twenty per cent for the year to date.

BUILDING STATISTICS REVEAL HUGE LOSSES

Building and engineering projects, as reported by the F. W. Dodge Co., covering public works, shipbuilding, and other enterprises affected by war-time conditions, record a heavy increase, the total for the half year thruout the country amounting to $700,000,000, in comparison with less than $500,000,000 for the 1916 period, $350,000,000 for the first half of 1915, and $320,000,000 for the first 1914 half. In New York state and northern New Jersey the figures are close to $150,000,000, against $75,000,000 for each of the preceding years.

But eliminate the shipbuilding and the war-time activities and considering the building construction alone the situation is not encouraging. In Greater New York plan filings for the first half of this year total $60,590,000, as against $101,655,000 for 1916 first half. Higher costs of materials and labor, growing uncertainty in regard to how the draft is going to affect the labor market and many other things are responsible for the falling off. Freight embargoes have played their part and nobody is surprised that nearly everything that goes into the construction of a building has gone up in price.

In Manhattan borough operations for the past six months have been cut in half as compared with last year. In 1916 the outlays for new buildings totaled $43,500,000, whereas for the first half of this year they approximate $21,500,000. Brooklyn this year reports $17,700,000 for new buildings and alterations as against $20,100,000 for last year. The Bronx shows only a trifle over $5,000,000 for this year as against $11,000,000 a year ago. Queens reports $6,600,000 for this year and $11,000,000 for last year. Richmond, the smallest borough of New York, is the only one not reactionary. It reports $975,000 for this year as against $750,000 last year. Suburban work has taken about $10,000,000 as compared with $12,000,000 for last year. Most of the money has gone into private dwellings.

* * *

Urges Brick Roads in Military Cantonments

Will P. Blair, secretary of the National Paving Brick Manufacturers' Association, Cleveland, Ohio, has recently returned from Washington, where he went to look into the question of the use of brick for the paved roads to be constructed to and within the military cantonments by the government. Judging from the latest information, the cantonment roads will be constructed under the charge of the quartermaster of each cantonment, and the engineer detailed from the office of public roads, department of agriculture. The government will construct sixteen cantonments for the men selected in the draft and six or eight for the national guard.

The locations of five or six of these cantonments are such that in point of time, economy and adaptibility, brick is the most desirable paving material from every standpoint, and it is believed that brick may be used in a half a dozen of the cantonments at least. From eight to ten miles of road will be required for each camp.

"In suggesting brick for the new cantonment roads the brick men have considered the nation's interests. Brick can satisfy every element of efficiency, sanitation, and other requirements," said Mr. Blair.

The public disregard of essentials was illustrated recently by Mr. Blair, in an analysis of the contents of a metropolitan newspaper. He found ten full pages devoted to the subject of summer vacations, on which thousands of dollars will soon be spent, one and one-half columns to food control, two columns to railroad transportation and congestion, which is largely responsbile for the present food situation, and only one-half column to the improvement of highways, which in this time, when railroads are taxed to the breaking points, offers the only solution to the transportation problem.

* * *

Extra! Louisville Sleuths Uncover Mystery!

Louisville, Ky., brick and tile men have just succeeded in solving a puzzle that has been getting a good deal of attention for the past fortnight. About the second week in June the official report from the office of the Secretary of State of Kentucky, at Frankfort, noted that the Ohio Valley Tile Co., of Louisville had reduced its capital stock from $150,000 to $100,000. The question was, who was the Ohio Valley Tile Co. and "whadda ya mean, tile?"

The telephone books and the city directory threw no light on the subject; the Board of Trade did not know; the Louisville Industrial Foundation had not landed a new manufacturing enterprise with its million-dollar factory fund. The inquiry was rather languid, everybody proceeding on the assumption that if what you don't know doesn't hurt you, anything you may find out after it has not hurt you won't hurt you after you do know it.

The matter dragged along for some time and it was accepted as one of those items of news which relate to a project somebody is organizing on a "pussy-foot" basis. One of the Louisville men, later, happened to meet and get the card of the representative of a cross tie concern. Then a light dawned. "Did your company," he asked, "recently reduce its capital from $150,000 to $100,000?" The answer of the Ohio Valley Tie Co. man was in the affirmative. A typographical error in the report from the Secretary of State's office had made "Tie" read "Tile."

"WITH MALICE TOWARD NONE *and* CHARITY *for* ALL"

No Sentiment Could Better Describe the Antidote for the Germ That Develops the Disease Known As "Knocking"—Fourth Winning Paper in Sales Ethics Contest

By Charles R. Porter

of Gloninger and Co., Pittsburgh, Pa.

IT IS RARE that a typographical error applies so pertinently as the one which, in the announcement of the Sales Ethics Competition, by *Brick and Clay Record* in its issue of February thirteenth, ascribes to our esteemed editor the expression, "casting *asperations* that may be detrimental to the general face brick business."

According to our old friend Noah Webster, the term "asperations" is defined as "a making rough"; to asperate is to "make rough or uneven." Truly a happy *faux pas,* if one must occur, for in an experience of over sixteen years in the face brick business, most of which has been devoted, with more or less success, to the sale of that commodity, the writer can conceive of no one circumstance which can so completely "roughen" his habitually even disposition, calm and serene temperament, and peaceful state of mind, as to come into contact, personally or by "ill report," with a specimen of that type of the genus homo whom we have honored with the title of "knocker."

The purpose of this competition is to set forth "real reasons" why the paragraph in our code of ethics which bears upon this subject should be observed; in order to accomplish this laudable design, let us attempt to get a bird's-eye view of the situation.

We, as salesmen, are presumed to be the accredited representatives of the face brick manufacturers or dealers whose names may be found, in small type, on the lower corner of the card which introduces ours, in fine, bold characters, to the building world. We are generally well instructed by our superior officers as to our proper deportment and course of action while in the faithful discharge of our duties, but alas, being merely human, we are liable, under stress of circumstances or in the heat of battle, to give utterance to expressions which were never authorized by our employers, and, not infrequently, instantly regretted by their author. In many cases, however, a salesman who may have begun his salesmanic career with the very best of intentions becomes more and more remiss in this regard—frequently suffers in his pride and his order-book from an unwarranted attack by an unscrupulous competitor, obeys the natural impulse to retaliate in kind, and finally attains to the undesirable state of mind and reputation contemplated in the subject matter of this discourse.

For the correction of this evil, therefore, the officials of our association have seen fit to incorporate into its code of ethics a paragraph to encourage its repression, and, if possible, entire extinction. No other article of the "code" has already been so much commented upon and so thoroly discussed as has this one, and without an iota of dissent from any source.

WHY NOT HONOR IN BRICK BUSINESS?

A code of ethics for the conduct of the members of any business organization is a grand institution—in fact, a necessity. It acts as does the governor on a steam engine, preventing it from "running wild." We have ethics, written or tacitly understood, in all things social, and until the existing unpleasantness in Europe (in which we are now deeply interested), in warfare; there is said to be honor even among thieves (nothing personal intended)—so, dear fellow brick salesmen, why not in the brick business?

We owe a debt of gratitude to the bright minds that formulated and adopted our code of ethics, particularly in the case of the article thereof now before the house. We certainly owe them all the loyalty and enthusiasm of which we are capable in its support—a serious study, comprehension, and discussion of it, to the end that its intent may be realized in this present generation of face brick salesmen, and those of the future encouraged to follow in the right path.

Again referring to our Webster's, we find this definition of the word "knock": "To strike; to drive against, as, to knock the head against a post." Now, candidly, what words could better describe a "knock," as we have come to know the term? "To strike"—and, in the case of the expression as we are considering it, not a manly blow from the front, where the striker (or knocker) might risk his precious face, but secretly, almost silently, like the strike of a snake in the grass, with the intent and purpose of doing the object of his venom the greatest harm in his power, without exposing himself to danger of retaliation or punishment.

Then—"as, to knock the head against a post"—exactly what, in nine times out of ten, the despicable, cowardly, confirmed knocker does. He finds in his path a "post," in the form of an honorable competitor whom he knows would not stoop to employ his methods, offering a product which he recognizes to be superior to his own, and, blinded to his own and his employers' best interests, charges at it, head down, in an insane attempt to batter it out of his way. Sometimes, if his head be sufficiently thick, the knocker succeeds in his immediate purpose, but a continuous performance of this sort is certain to have its effect upon the hardest of craniums.

KNOCKING A CONFESSION OF WEAKNESS

A knock is seldom clever; on the contrary it is prime evidence of stupidity and incompetence—a lack of discretion and business judgment, and, in a salesman, an admission of a weak, anaemic character, a want of faith in his own ability to sell his material upon its merits, and in the quality and desirability of that material. Furthermore, a knock is rarely the truth; the farther it is removed from veracity, the harder the knock. In fact, there are as many degrees, shades and tones of knocks as there are, these days, in the colors of face brick. It is not essential that a knock be an open, direct slander, a "grand slam," even an inuendo. An old friend, of life-long experience in the sale and manufacture of brick, recently said in this connection: "It isn't even necessary to *say* anything against a man or his product; you ask me my opinion, and all I need do is to give you a quiet, sardonic smile, a deprecatory shrug, and if you have sufficient faith in me that is enough to 'queer' him with you."

A modern expression has it that "A knock is always a boost." Possibly. It may serve to impress a prospective buyer with the fact that the knocker has something to fear in your product, and cause him to investigate, whereas, otherwise, he might have forgotten your existence. It may, in the case of discerning men, or women (with whom we have frequently to deal), have its natural effect, and disgust them with the salesman who attempts to impose upon their intelligence in this manner. It may have no immediate influence in your favor, but, "murder will out," and patience often has its own reward.

THE KNOCKER AN HISTORIC FIGURE

The knocker is not a new nor unique figure in history; the first chapter of our human chronicles, Biblically speaking, contains the account of an eminently successful "knocker"—and would that the Powers that Be could kindly arrange matters so that the vile knocker of today might be branded and cast out from the society of his fellowman! Thruout the ages the knocker has been known and hated, has had his day and his reward, and lo, he is with us always.

Not to be pessimistic, however, it is to be hoped that in the light of modern civilization, methods and ideals, this type of vertebrate, as have many of his prehistoric progenitors, may become extinct, and in time cease to encumber the earth. In the meantime, he is here, and to our regret, we must deal with him.

First, then, the knocker is intensely human, in that he recognizes the old adage that "self-preservation is the first law of nature." It is this spirit that animates him—a selfish, egotistical, in-growing state of mind that induces him to consider nothing but his own precious self-interest, and to hesitate at no means that will attain his ends. Of this type no brave, honest, whole-souled, manly man was ever developed; the craven, lying, self-deceiving failure is the only possible result.

CONTRASTING THE KNOCKER AND THE BUSINESS MAN

We all know the physical and mental attributes of the fine, noble, modest, clean competitor, with his upright bearing, direct look, and kindly expression; we trust him, admire him, honor him—are glad to meet him, talk with him, and assist him in every way in our power. We also recognize the deficiencies of his antithesis—the evasive, shifting glance, the ingratiating, furtive manner, forced mask of a smile, and unsavory reputation; we avoid him whenever possible, withdraw into our shells when he is present or even within earshot, despise, condemn, and reject him.

The activities of the knocker hurt. They hurt his contemporaries, in that, by the time the good people who patronize us have been deceived a few times by him, they as a matter of course place us all in the same category. Last fall an old customer asked the writer, "Are all face brick salesmen dishonest?" In reply to an expression of hope to the contrary, he explained that, in the course of the competition to sell him face brick for his new dwelling, three salesmen, representing three separate dealers, had laid claim to have sold and furnished the face brick for one certain building. The consequence was that he would deal with no one of the three, and it was easy sailing for Number Four. While the representations made by the salesmen in this instance may or may not have been in the nature of a knock, it serves to illustrate the point.

The knock may be a boost for the other fellow, but it reflects upon the brotherhood, lowers the standard of salesmanship, tends to brand us all alike, and is a disgrace to our "profession."

EMPLOYER GREATEST SUFFERER

It is the employer of a knocker who suffers most, in the last analysis, from his "asperations." In a recent well written article of fiction, a modern business story, the sales manager of a large concern, after having carefully and thoroly prepared his latest recruit to the sales force for his debut upon the road, concluded his instructions with the words: "If I ever hear of you knocking a competitor's goods, I will take the first train I can get to wherever you may be, and cheerfully throttle you." This line, altho from the pen of a writer of stories, tritely expresses the attitude of a real business man toward an employe who will betray him in such a manner. The employer gets his fill of the knocker's activities, and the latter moves on; but the stigma that the knocker has fastened upon his house lives to harass it long after he has packed up his hammer and his bumptious self-esteem and departed for other climes.

An eminently successful salesman of a specialty in building construction said in reply to a question on the point: "I simply haven't time to knock; I have heard from architects and contractors of competitors and their salesmen knocking me and my material, but have always told them, 'Let us forget that—it will take all the time that you can give me to tell you the *good* points of this article I am selling.'" If for no other reason, this young man showed his wisdom and perspicacity by conserving his own and his customer's time; that "time is money" was never nearer the truth than in this present day of big business; to waste it is no less than a crime, and words fail to describe the futility and asininity of wasting it in the practice of knocking.

MAKING A HARD ROAD HARDER

It is distinctly unnecessary, so far as the average prospective customer is concerned, for one salesman to knock another or his material. The buyer is prepared to be suspicious, critical, and hard to convince of the absolute perfection of any article offered for his consideration, especially, as is the case in the majority of brick sales, from carefully selected and prepared samples. His almost invariable attitude is that he is being "gold-bricked," and the best salesman who ever lived will have his hands full to convince him that the goods will be equal to the sample.

Short-sightedness is, of course, the knocker's long suit; if he could see beyond the tip of his nose he would have an operation performed tomorrow to cure him of his affliction. Long experience of loss of friendship, loss of position and prestige, of contempt from architects and contractors, of open accusation and condemnation, have, in known cases, failed to "change the leopard's spots." Even friendly "tips" and encouragement from kindly disposed interested parties who have endeavored to enlighten them as to the error of their ways have had no effect. Nothing remains in such cases but to leave the swine to wallow in his mire.

The confirmed knocker is a mental bankrupt, who, it seems, can never be discharged from bankruptcy.

DISAPPROBATION SUPPLANTING INDULGENCE

The practice of knocking has until recent years received but little opposition. Not that it was ever regarded with any degree of approval, but it seemed to be considered a part of the game—a necessary evil. In these enlightened days, however, of chambers of commerce, boards of trade, and business and trade associations, it is receiving well deserved disapprobation.

The old saying that "Competition is the life of trade" has been revised to read, "Co-operation is the life of trade"—and of all else. "United we stand, divided we fall," is as true of any and all lines of business as it is of our glorious United States of America. This conviction is growing daily; even the lowliest of labor and serving classes have adopted the trade union as their method of self-preservation, as all who may, by the grace of the honorable judges, have the felicity of perusing this peroration, are well aware. The above-mentioned organizations, automatically, by their very existence, condemn and preclude the practice of knocking.

The finest plan for the permanent eradication of this evil is the formation of local trade or business associations, these to be combined in national, or at least sectional governing bodies, at the regular meetings and conventions of which the individuals composing the rank and file of each army of our industrial world may meet face to face and eye to eye, and get acquainted. Suspicion, antagonism, and throat-cutting vanish before the sunshine of a smile and a warm handclasp. A mutual understanding makes business friends of erstwhile more or less bitter opponents. Good feeling between competitors need not and should not eliminate or even limit fair competitions.

A very little of the "milk of human kindness" can sweeten our own and our neighbors' lives, and we have learned that the Golden Rule may be utilized in business with as great effect as within our beloved family and social circles.

It is not to be expected that we can all agree at all times, or that we can reach perfection. So long as we are human, we will commit error, and be liable to censure. Honest criticism is just, and to the right-minded is welcome, for only by realizing our faults can we hope to correct them. The only man for whom there is no hope is the one who, in his own esteem, is ever and always absolutely right.

FIVE POWERFUL ARGUMENTS AGAINST KNOCKING

The real reasons why the members of the American Face Brick Association should insist upon the observance, by their employes and selling forces and connections, of Article Four of the Code of Ethics, are:

First, in their own best interest and for their own protection; to preserve the good name of the individual concern and of the face brick business.

Second, for the sake of the morale of their sales force, the reformation of a "predisposed," incipient, or confirmed knocker, transforming him into a competent, valuable, honorable business man; for the salesman of today is the man of affairs of tomorrow.

Third, on account of the futility of the practice, the waste of valuable time that it incurs, and its liability to turn and "bite the biter."

Fourth, to uphold, support and preserve the organization which has done such great work in, and is constantly striving for, the improvement and betterment of the business in which we are so vitally interested; whose officials give so generously of their time, brains, and energy for the sake of the ideals and ethics for which the association stands.

Fifth, as "no man liveth unto himself," neither does any organization of men. We may or may not have a large influence, ethically or otherwise, in the business world of our great country, but it is clearly our duty to ourselves and to all under whose observation we may come, to present a united body of individuals professing and practicing the highest of aims and principles, above reproach in our dealings with our fellowmen.

To conclude the discussion of this subject, no sentiment could better describe the antidote for the germ that develops that pestilential disease known as "knocking" than that contained in the words of our greatest president:

"With malice toward none, and charity for all."

◆ ◆ ◆

To Operate Mine in Overcoming Shortage

Difficulties encountered in obtaining coal have been so pronounced during the last half year that the Barbourville (Ky.) Brick & Tile Co. has taken some very active and constructive steps to overcome them by organizing a subsidiary coal company, which will operate a coal mine and produce the fuel that the plant requires for its operation. The Barbourville company operates a large plant and consumes a great amount of coal in the course of a year. It is quite advantageously located, being very close to the coal-bearing lands and has, by the very novel solution which the officers of this company have worked out to the coal shortage problem, completely removed the spectre of a closed plant due to a lack of coal.

⁂

Zone System for Construction Spreads

The widely discussed ordinance passed by the New York City government by which the entire municipality has been divided into building construction zones on a basis of fire-protective demands, has awakened remarkable interest thruout the country. During the last twelve months, city after city has adopted similar building code ordinances and include such representative centers as Akron, Ohio, Berkeley, Cal., Chicago, Ill., Cleveland, Ohio, Des Moines, Iowa, East Orange, N. J., Elgin, Ill., Los Angeles, Cal., Minneapolis, Minn., Newark, N. J., Omaha, Neb., Ottawa, Ill., Philadelphia, Pa., Sacramento, Cal., St. Louis, Mo., Springfield, Mass., and Washington, D. C.

⁂

St. Louis Concern Erecting New Plant

A new plant, which is to be completed by fall, is being erected by the Walsh Fire Clay Products Co. at Vandalia, Mo., to relieve the pressure which increasing business is exerting upon the other two plants of the firm. The new plant is in Audrain County, Mo., and is being constructed adjacent to a plant which is already in operation. Mr. Parker, of the St. Louis office of the firm, points to the new plant to prove his assertion that business is good. The original plant in Audrain County and the one in St. Louis are being worked to the limit of their capacity, but it is expected that the new plant will relieve this condition and enable the company to conveniently take care of all business. A shortage of labor and difficulty in obtaining cars have somewhat affected the company's business, but have not worked any serious hardship to the firm.

⁂

Motor Trucks Popular in Connecticut

Practically all the leading brickmakers in Hartford County, Conn., are using motor trucks for delivery. The power dump body is most widely used, because it provides for prompt discharge of the load.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

Setting Forth the Importance of Rate Knowledge and the Governmental Machinery for Transportation Regulation

By Sydney A. Hale

A NEW FEATURE

¶ This is the first of seventeen valuable and interesting articles on traffic subjects.

¶ These articles have been designed to help the man in the office who finds it a part of his duty to take care of the traffic work, but who realizes his need for a better and more accurate knowledge along these lines.

¶ The executive who wants to know more about traffic matters can also obtain considerable knowledge from a reading of the installments as they appear from issue to issue.

¶ In other words, for the next six or eight months "Brick and Clay Record" will conduct a correspondence course in freight tariffs and transportation questions absolutely free of cost to its readers.

¶ You men who are busy and whose time is valuable can get a good general knowledge of this important subject by devoting one evening every other week to the study of these articles.

A SCHEDULE OF RATES published in the manner provided by law speaks with equal authority to the shipper and to the carrier, and both are equally chargeable with notice of the rate.—Poor Grain Co. v. C. B. & Q. Rd., 12 I. C. C., 469.

IMPORTANCE OF KNOWLEDGE OF RATES

Success in business is dependent upon many factors. Among the leading ones may be mentioned capital, experience, efficiency in production and distribution—which is salesmanship in its highest sense—and natural location with reference to sources of supply and territory of consumption. The subjects of efficiency and location are so closely interwoven with as to be almost inseparable from the question of freight rates. Production within the factory may be upon the most economical basis possible, distribution and sales may be conducted upon the most approved principles of scientific management, but, if the rates paid upon the raw materials in and on the finished product out are inequitable, the business is under a handicap that seriously lessens and at times completely nullifies the advantages of efficient management in other directions. So, too, if the location be geographically beneficial, but the adjustment of transportation rates fails to give due weight to that location, the enterprise labors under an unwarranted disability.

Large corporations have long realized the importance of studying transportation conditions. They employ high-salaried men, recruited from the railroad ranks, to act as traffic managers. These traffic managers co-operate with the sales departments in distribution. If the sales manager finds that he cannot sell his goods within a certain territory, the traffic manager analyzes the rate situation in that territory to see if the adjustment is unduly unfavorable to the company he represents. If such proves to be the case, he proceeds to seek a re-adjustment, either by negotiation with the proper traffic officials of the transportation companies serving that territory or by complaint to the proper federal or state body charged with the regulation of rates and railroad service.

Likewise, the skilled traffic manager plays an important part in the producing end of the business by seeing that the rates upon the inbound freight, either raw material to be turned into manufactured articles, supplies to run the factory—such as fuel—or manufactured articles purchased for resale and redistribution are fair. When it is remembered that the freight upon many articles of raw material represents a very substantial part—in many cases over fifty per cent.—of the cost, the importance of rate knowledge is readily apparent to the up-to-date executive.

SMALLER BUSINESS HAS EQUAL CHANCE

What is true of the large business is equally true of the smaller commercial establishment. In certain phases of production and distribution, volume and size give the larger institution an advantage over its smaller competitors. When the question of rate adjustment is touched, however, the law demands that all shippers and receivers of freight, whether large or small, whether handling one carload a week or 100 a day, shall be upon an even footing. Therefore, if these questions are of such importance to the large business as to justify the closest attention, it is patent that they were equally worthy of the consideration of the smaller manufacturer, jobber, wholesaler and retailer.

In many of its aspects, the traffic problem is a highly technical one. That does not mean, however, that its fundamentals cannot be grasped by the business man of average intelligence. The more restricted the territory the business man works in the fewer the details of the traffic situation that he will have to master. No sane man would pay an invoice for a bill of goods until he had satisfied himself that the quantities and qualities were as stated in the bill, that the prices were correct and the extensions and footings accurate. The up-to-date executive of even the smallest business today gives time and thought to approved accounting systems, methods of reducing handling costs, increasing sales, cutting down

(*Continued on Page 68.*)

SELLERS LANDS *an* ORDER *for the* NEW SILICA WEDGES

Incidently, He Makes a Loyal Friend of "Big Tom" by Quick Delivery, Made Possible by Standard Shapes

By G. W. Greenwood, M. A. (Oxon)

Secretary, United Fire Brick Company,
Uniontown, Pa.

A FEW WEEKS AFTER he and Baldwin had thrashed out the advantages of the new 12x6x3@2¾ wedges and an order had been placed for uniform lithographed charts, Sellers was sitting at his desk figuring out why a brick 12x6x4½ could not be used instead of a 12x6x1½ split, when in strode Big Tom, the manager of the Clair Glass Co. Large and massive, looking like a heavy weight pugilist, he roared out, "Young man, I want silica brick. I want 'em quick. I want 'em bad."

"Very sorry," responded Sellers, courteously and deferentially, "but if you really want the brick very bad, we aren't in it. We don't make that kind of brick if we can help it, and even when we can't help it we wouldn't ship them anyway."

Big Tom reached for a brick, remarking, "I'll show you what to do with the bad ones."

"Don't for heaven's sake," exclaimed Sellers, holding up his hands in supplication. "That isn't a bad brick. I hunted all over a hack of a hundred thousand brick for that sample and I never expect to see another like it. No, don't drop it—lay it down like an egg."

"See here, my young friend, I don't lay eggs. Not even glass ones. Now I'll let you off just as soon as you say you can make immediate shipment of a duplicate of our order for two years ago."

SUBSTITUTING STANDARDS

"Just a minute," responded Sellers, with alacrity, and, after securing a copy of the Clair Glass Co.'s order for silica, he continued; "I find that two years ago we shipped you, among other items, a quantity of 12x6x2$\frac{11}{16}$@2½ and 12x9x2$\frac{11}{16}$@2½ wedges. We do not have any of these which we can ship right away, but we'll see to it that your requirements are taken care of satisfactorily, anyway."

"How in the whole face of creation can you take care of our requirements if you don't have what we want?" demanded Big Tom.

"Easy. You see, we have a quantity of 12x6x3@2¾ and 12x9x3@2¾ wedges coming out of kilns right now, and one kind is just as good as another and a whole lot better," explained Sellers, facetiously.

"Yes, maybe," assented Big Tom, dubiously, "but how will I know how many of these new fangled wedges it is going to take? Won't it make a difference in the quantities when you change the tapers?"

"We will attend to that for you. We have here the span and rise of the arch of your cap, and the length of each section, and from these it is no trick at all to figure the quantities of the different straights and wedges required. Just a little problem in trigonometry."

"Trigonometry, is it? Why I thought that was what you charged a man with when he had three wives."

"At that rate," laughed Sellers, "if a man had only two wives you would charge him with bigotry."

"Young man," solemnly warned Big Tom, as he stood in the doorway ready to take his departure, "if you can't give me by tomorrow the number of the car containing my silica brick I'm going to be guilty of murder."

"Miss Jemmett," remarked Sellers, as the echoes of their caller's footsteps died away in the distance, "I wish everyone had as large a heart as Big Tom. Now let's drop everything and compute this glass tank. Just please check me on the radius, the central angle, the length of the arc, the number of courses, the relative number of courses of wedges and straights, and the total quantity of each."

"Just a minute," said Miss Jemmett, tapping her teeth with her pencil, "In the letters you have been dictating for weeks and months you have been side-stepping silica orders right and left. How do you come to accept the Clair Glass Co.'s order right off the bat?"

"Trigonometry, Is It? Why I Thought That Was What You Charged a Man With When He Had Three Wives."

LOOKING INTO THE FUTURE

Sellers pointed to a wall map. "Just see where their plant and our silica plant are located. You see the S. & S.

railroad connecting them? That's where Baldwin and the G. M. shine. We had a council of war over this map a few months ago, and decided that the consumers on the S. & S. railway system constituted a logical part of our field, and that our first job was to supply them. If we were to have accepted even a fair quantity of the orders for silica tendered us, we would not have been in a position to take care of Big Tom. In normal times, these other would-be customers will be plentifully supplied nearer their own factories and our friends will remember, I hope, that we passed up other business in order to take care of theirs. Where would we have been had we accepted the orders which came in from every point of the compass?"

"We would have had up a sign 'Standing Room Only'," laughed Miss Jemmett.

"Not only that, but just about the time we would get out a bunch of brick for shipment to California or New Mexico or Timbuctoo the various railroads would take turns placing embargoes, and we would have to stock and hold the material. You remember the Tele Glass Co. order?"

"Is that the one which was loaded during a raise in embargoes which lasted only twenty-four hours and had to be unloaded on account of the special shapes in it?"

DODGING EMBARGOES WITH STANDARD SHAPES

"Yes, and that reminds me of another move of this council of war. We decided, so far as possible, to dodge specials and to stick to standards, so that if one route is embargoed we can ship to some other destination. Also, those far-seeing chaps saw that embargoes against shipments to points on their own line were impossible, which is certainly proving to be the case. Again, take this shipment to the Clair Glass Co. If we have any difficulty in getting a car, Big Tom will lend a hand. If the car is held up in transit, he will get on the phone and let out a roar like a Kansas cyclone. Now if he were located on a connecting line, he would have little influence with the initial line, either in securing empties or keeping them on the move. See?"

"Well, my curiosity is appeased, at any rate, even if we can't take it all in, so now I'm ready to go ahead with the calculations."

"All ready," announced Sellers. "Here is the first section, twenty-four feet long, with a span of eighteen feet and six inches and a rise of thirty inches."

COMPUTING BIG TOM'S ORDER

Plugging the calculating machine, leafing books of trigonometric tables, checking each other's work step by step, they arrived at the following results:

Radius of circle, 220.35 inches.
Central angle, approximately 60° 30′.
Length of arc, approximately 245 inches.
Number of courses, 82.
Ratio of straights to wedges, 265 to 432.
Courses required, 31 straights, 51 wedges.
Quantity required, 1488 straights, 2448 wedges.

The other sections were worked out in a similar manner; a small per cent. added as a factor of safety, and enough keys included to close in the cap, if needed. Then brick were taken into consideration for the inverted arches and the entire quantity phoned to the plant for rush shipment.

"It beats me why we cannot use 12x9x3@2½ arches instead of 12x6x3@2½ arches, or in any events to be able to employ some sort of an arch nine inches wide instead of six." remarked Sellers, thoughtfully.

"It seems to me," commented Miss Jemmett, "that it should be possible to get out a series of tables so that one can just look up the span and rise and find at once the number of courses of each to turn the arch."

"There's something in that, Miss Jemmett. But instead of attempting to cover every conceivable case, let's get the dimensions of as many caps as we can and work up the information covering these actual cases first. It isn't a half-bad idea."*

MISS JEMMETT "CASHES IN"

When Miss Jemmett, the following afternoon, telephoned the car number to Big Tom, he called back jovially, "Miss Jemmett, you're a gem! Now just you tell that man Sellers for me that when some of these other silica salesmen find business slacking up and come camping on our doorstep waiting for orders, I'll tell them where to head in. Now if you will just get after that car and trace it thru, and get it here in ten days, I'll see that you get a pound of candy."

"What If It Arrives in Eight Days?" Shrewdly Inquired Miss Jemmett. A Hearty Laugh Surged Over the Wire as Big Tom Replied, "Say, You're Onto Your Job, Fast Enough. I'll Just Make That One Pound Additional for Every Day Less Than Ten."

"What if it arrives in eight days?" shrewdly inquired Miss Jemmett.

A hearty laugh surged over the wire as Big Tom replied, "Say, you're onto your job, fast enough. I'll just make that one pound additional for every day less than ten."

A week later the expressman left for Miss Jemmett a five-pound package shipped by the Clair Glass Co.

⁂

Status of Reorganized Minneapolis Co.

The Colburn Brick & Tile Co. is the name of the firm now doing business at 400 First National Soo Line Building, Minneapolis, Minn., where formerly the name-plate on the door read "Colburn-Murray Brick Co." In the reorganization which has been effected, T. J. Murray withdrew from active participation and has formed and is now managing the Murray Building Materials Co.

The new officers of the reorganized company are: President, R. R. Colburn; vice-president, M. T. Gunderson; secretary-treasurer, G. E. Rydell, and assistant secretary-treasurer, H. W. Linder. Immediately following the rejuvenation of the firm it purchased the plant of the Minnesota Brick and Tile Co., at Barr, Minn., and is now making a specialty of 5x8x12 hollow tile. The plant is situated near an excellent clay bed, it is said, and employs from forty to fifty men.

---

*The writer would be glad to receive the dimensions of various caps of glass tanks.

The SUPERINTENDENT

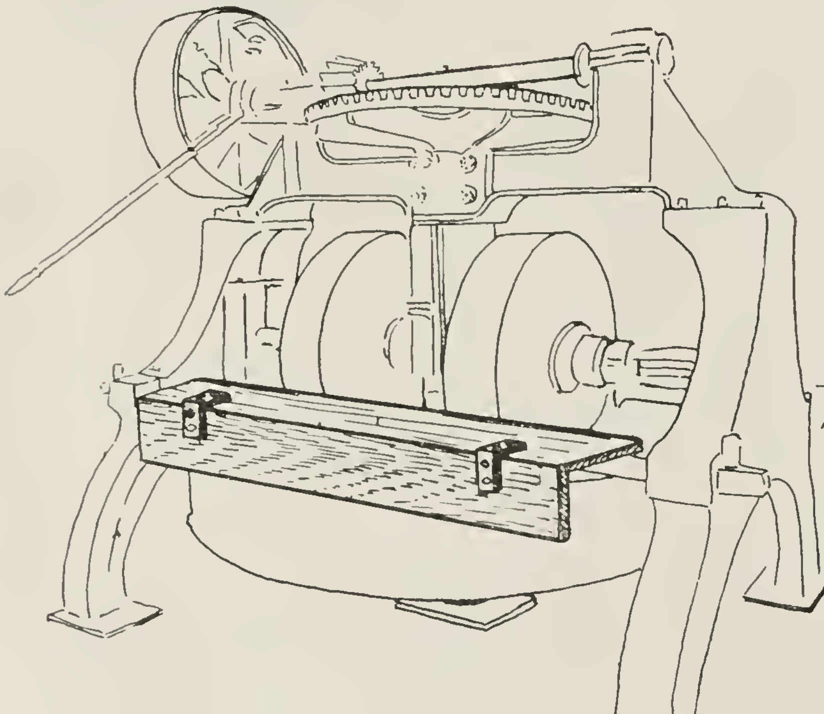
Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Device to Keep Clay in Pan

A simple and exceedingly useful dry-pan device is employed by an Ohio superintendent to prevent clay from being forced over the rim of the pan and falling into the elevator pit. Very often it happens that the dry pan receives a larger quantity of material than it can effectively handle, and as a result, a portion of the clay is forced out of the pan and into the elevator pit, where, in the form of large lumps, it falls into the buckets and prevents them from conveying their full amount of ground material.

Unlimited trouble is experienced when this occurs, especially at the piano wire screens. The large lumps, which are carried up by the elevator, are thrown upon the comparatively delicate wires, causing excessive ware, and shortening the life of the screens materially.

To overcome this trouble, the device pictured in the accompanying illustration was improvised. It consists of two planks, the dimensions of which are about two inches wide, six to eight inches in breadth and long enough to extend about six inches over the rim of the pan on both sides. These planks are placed together at right angles, and fastened by iron braces.



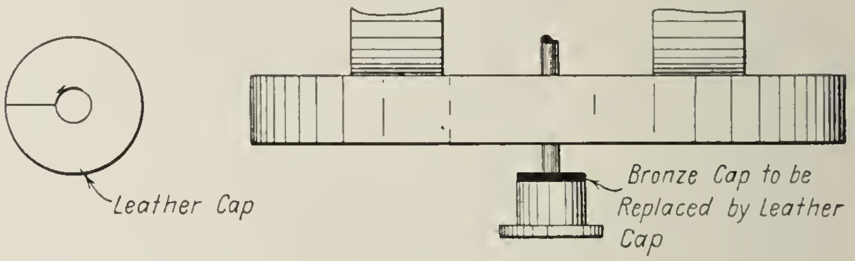
Clay Can Be Prevented from Falling Over the Dry Pan Rim by Two Planks Placed In the Position Shown Above

The device is so placed that the horizontal plank just clears the pan scraper. The vertical plank is placed as closely as possible to the rim of the pan at that point where the pan scraper approaches the rim. The apparatus may be fastened securely by attaching it to the dry pan supports.

Protecting Dry-pan Bearing With Leather Cap

Very often the bronze cover which serves to keep the dust out of the grease in the bearing containing the lower end of the vertical shaft of a dry pan slips off and fails to properly perform its function. A unique little idea which is made use of on one plant to overcome this difficulty is illustrated in the accompanying sketch.

By using a leather cap in place of the bronze covering no trouble due to the cap slipping off and allowing dust to enter is experienced. The leather cap is made from a piece of leather cut large enough to fit the bearing cup and then a hole cut in it of such size so that it will fit snugly to the vertical shaft of the dry pan. A slit is cut in this leather cap in the manner shown in illustration so that the cap may be placed on the shaft. This slit is sewed tight after being placed on the shaft. The cap will revolve with the pan shaft and fits tightly to the oil-pot rim because of its under surface being coated with oil. In this way no dust will enter the bearing cup and all worry of the covering slipping from the pot will be unnecessary. This leather cap will be found to wear exceedingly well.



The Substitution of a Leather Bearing Cap for the Bronze Cap on the Dry Pan Bearing Eliminates the Problem of Slipping

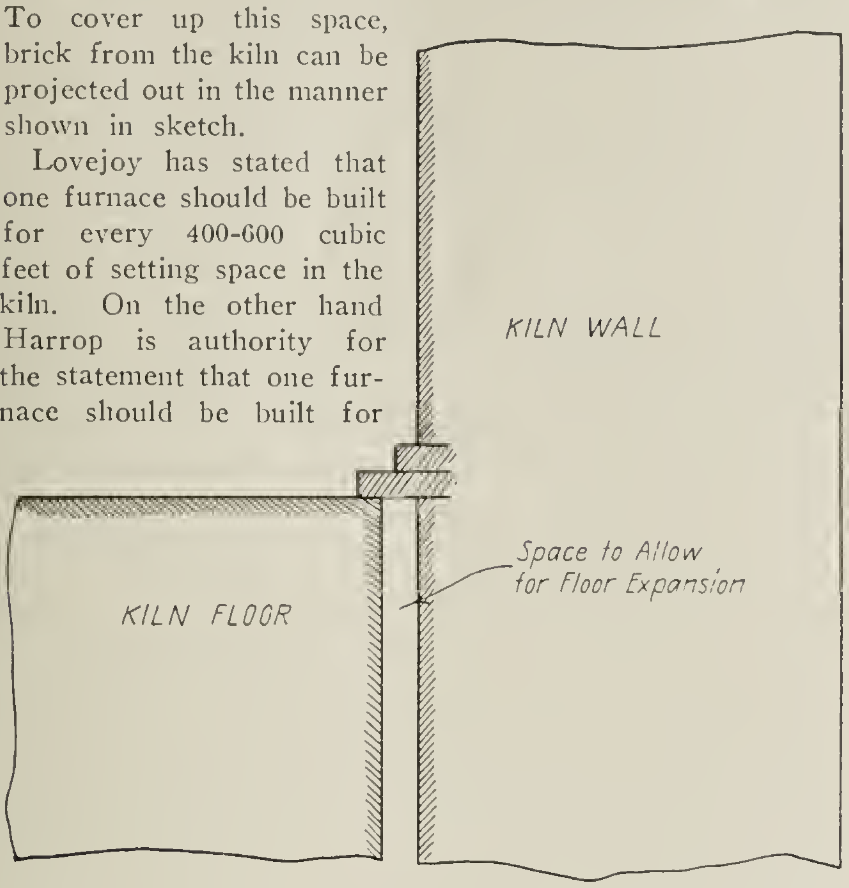
⁂

Kiln Furnace Data

Whenever a plant desires to increase its capacity by building additional kilns or whenever a new plant is being constructed the custom is to build the new kilns from the plans used in constructing the old ones or to copy some other plant's kiln whenever such a kiln is thought to be suitable for the conditions.

A survey of a large number of successful commercial kilns has given some general data of great value which might well be considered in the construction of new kilns. It must be kept in mind, however, that these are generalizations and should not be followed too closely, since their success is dependent upon conditions. As every superintendent knows each plant has its own characteristic problems to meet and what may give good results on one yard may prove disappointing on another.

A fact of note is that the best floor system is the simplest one that can be made to work. That is, practise has shown that a floor system of simple construction has proved to be of more value whenever such a bottom could be used than a complicated kiln bottom. To provide for separate action the kiln floor should be entirely separate from the kiln and bag walls. Usually a space of one inch separates these parts. To cover up this space, brick from the kiln can be projected out in the manner shown in sketch.



Dust and Debris Is Prevented from Falling Into the Kiln Floor Expansion Joint By Projecting Brick Out from the Kiln Wall Over the Space

Lovejoy has stated that one furnace should be built for every 400-600 cubic feet of setting space in the kiln. On the other hand Harrop is authority for the statement that one furnace should be built for every 450 cubic feet of setting space in the kiln. Common practice reveals the following number of fireboxes for kilns of various diameters:

Diameter of Kiln in Feet	Number of Furnaces to Kiln
26	8
28—30	10
32—36	12
38—42	14

The size of the grate in the fireboxes will also depend upon the cubic feet of setting capacity of the kiln. The grate area in square feet generally equals one and one-half per cent. of the cubic feet of setting capacity where the ware is to be burned to cone one (approximately 2,000° Fahr.) and the coal fired is of such a quality that its heat value is equivalent to 13,000 B. t. u. In cases where the ware is matured at a higher temperature than cone one, the above one and one-half per cent. is increased by five one-hundredths of one per cent. for each additional cone to which the ware is burned. Where inclined grates are used instead of flat grates substitute eight-tenths of one per cent. for the one and one-half per cent. in the above calculations and proceed as before. In case a coking plate is used figure one-half of the coking plate area as grate area.

Practise at various centers of the clayworking industry has been as follows:

In Germany the grate area in square feet is equal to one per cent. to one and one-half per cent. of the cubical setting capacity for ware burned to cones four (approximately 2,210° Fahr.), or five (approximately 2,245° Fahr.).

For Seattle (Wash.) kilns the grate area is figured at one and four-tenths per cent. of the cubical setting capacity on the basis that the coal used has a heat value of 11,000 B. t. u.

In the Hocking Valley district the kilns have on the average a grate area in square feet equal to one and two-tenths per cent. to nine-tenths per cent. of the cubical setting capacity on round kilns and nine-tenths per cent. of the cubical setting capacity on rectangular kilns. However, Harrop claims that nine-tenths per cent. is too small a figure.

Do not forget that *fireboxes which are too large waste fuel.*

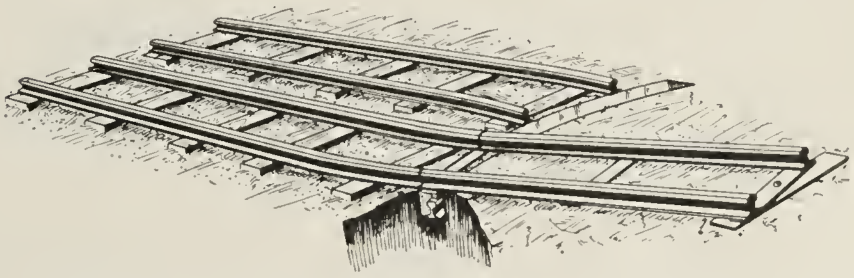
It is best practise to build the grate as far in as possible so as to conserve the heat. In some cases it has proven of value to build the fireboxes so that the grate level is slightly below the level of the kiln floor.

For a good arch over the firebox use a double four and one-half-inch arch with a space of about one inch between each arch. This space can then be plugged with clay or a similar substance thus giving a good insulating arch which will also be very refractory.

⁂

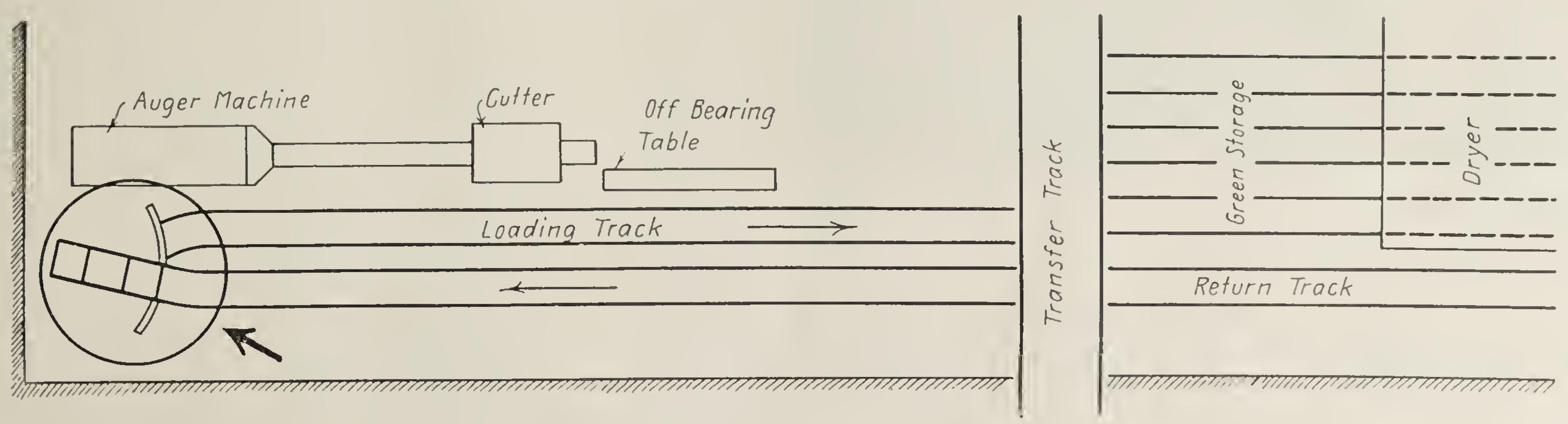
Switching Dryer Cars

The use of the ordinary small switch inside the machine room is at best none too satisfactory, especially when used to switch over the empty dryer car from the receiving track to the loading track which runs alongside the off-bearing belt. The car must be pushed far ahead, the switch thrown, and the car pushed over the switch onto the loading track and ahead to its position alongside the machine.



Perspective View Showing the Indented Curved Rail Upon Which the Pivoted Switching Section Swings From the Receiving to the Loading Track

An improvement has been designed over this system



Layout of the Plant of the Eastern Illinois Clay Co., On Which Is Used the Switching Arrangement Described in the Accompanying Item. The Empty Dryer Car Is Pushed from the Receiving Track Onto the Switching Section Which Is Simply Swung Over to Make Connections With the Loading Track

You Should Know of the Many Advantages of
THE POTTS SPECIAL
A Soft Mud Brick Machine
Self Striking—Horizontal—for Common and Fire Brick
Ask Us for Details and Names of Users
C. & A. POTTS & CO., Indianapolis, Ind.

MORE WORKING CAPITAL
or do you want to expand, to improve a good plant? We specialize in clay plant properties, arrange for the issuance and sale of Bonds. We have rendered aid to many plants. Write us about your needs.
F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILLINOIS

UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket
Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used. Sprockets, Buckets, Elevators, etc.—Send for Catalog
"The Chain of Double Life"
THE UNION CHAIN & MFG. CO., SEVILLE, OHIO

CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo. Michigan, U. S. A.

This Is the Way Your Bearings Look
To secure it you simply place a graphite sheet between the mandrel and the bearing box and pour in the babbitt. The result is a babbitt bearing impregnated with graphite spots. These bearings last from two to ten times as long on severe work.
Randall Graphite Sheet Lubricator Co., 816 W. Lake St., Chicago, Ill.

BRICKMAKERS' HEADQUARTERS FOR GREASES AND OILS
A special brand for each requirement of every kind and size of machine. Also Belt Dressing and Boiler Compounds. Write for catalogue and prices.
G. B. STOCK XYLITE GREASE & OIL CO., Port Huron, Mich., U. S. A.

CORK INSERT PULLEYS
BRAKE LININGS, CLUTCH FACINGS AND TENSIONS
overcome the worst conditions and produce operating economy.
SEND FOR CATALOG
THE CORK INSERT CO., 168A Federal Street, Boston, Mass.

TO STOP advertising to save money is like stopping a clock to save time. —*The Little News.*

by F. H. Meier, owner of the newly constructed and model plant of the Eastern Illinois Clay Co., at St. Anne, Ill., which contains considerable merit, and which is without a doubt, an arrangement that might be employed to advantage by many clay products manufacturers thruout the country. It is especially applicable where the receiving and loaded tracks for the dryer cars, running alongside the machine, butt up against the wall of the machine room and necessitate the use of one transfer track to carry the empty cars to and the loaded cars away from the auger machine.

The switching track which Mr. Meier has perfected and which he has placed in operation upon his plant, is very clearly illustrated in the smaller of the accompanying drawings. Its application to his particular plant layout is shown in the larger illustration, the circle indicating the position of the switching track.

It consists of nothing more than a track sufficiently long to accommodate one dryer car, which is pivoted on one end to an iron plate in the floor, and which, by virtue of this arrangement, may be swung back and forth over a track laid in a trench dug at the free end of the switching section. The trench which accommodates the rail is about six inches wide and deep and is cut on the same arc as that circumscribed by the track in its movement. Two rollers are attached to the bottom of the track, which run upon the rail, are fastened at the proper angle to operate most efficiently. Stops are placed on the trench rail which bring the switching section to a halt when its rail are in alignment with those of the receiving or loading track.

In operating this switch, therefore, it is only necessary to push the car forward upon the pivoted switching track, swing the track over on the trench rail until it forms a connection with the loading track, and draw the car down alongside the off-bearing belt. The many advantages of this arrangement can be very readily perceived, it is an arrangement which might be used by the hundreds of clay plants whose receiving and loading tracks are laid out in a similar manner and which are now employing the ordinary switching track.

* * *

Forcing Brick Shipments

It seems that rather unreasonable measures are being adopted by some of the large furnace builders who have been troubled with non-delivery of fire brick. Judging from the way the contractors act there is no such thing as a car shortage to prevent brick manufacturers from immediately shipping the material as soon as it is drawn from the kilns.

Some of the contractors have recently secured the services of a young man whose duties consist of visiting the plants where they have brick orders, and demanding that cars be sent out that day to various points. This individual and his employers seemingly do not know that a full quota of cars is not shifted on the siding daily, and that when the railroad agent states that certain cars must go in the direction best suited to their needs, there is no way to change the agent's orders.

Brick manufacturers are willing to give better shipping facilities if cars were only to be had, and it appears useless for any contractor or dealer to try to effect a change when conditions are non-changeable.

* * *

The main building of the Dunlap & Lisk Pottery Co., at Matawan, N. J., was struck by lightning early in the month and slightly damaged.

STRAWS *that* SHOW *the* WIND

Brief Paragraphs from Many Points Indicating the Market's Trend in the Light of Building Activity

Altho the immense amount of engineering and manufacturing projects now under way thruout the country testifies to the stability of business in general, yet, in the building field there is still to be noted a decided decrease in the valuation of such operations as residences, schools, churches, etc. This is a natural condition for such times as we are passing thru, and there is no doubt but that a continuation of the building slump can be expected. Prices of materials are too high to draw the attention of the prospective house builder, despite the fact that prices cannot be expected to decline for a long period.

In some quarters prevailing high costs of material have not proved detrimental to building. Take, for instance, Boston, Philadelphia, Cincinnati, Cleveland, Detroit, Los Angeles, St. Louis and a few other large cities. Gains have been made so far this year in every one of the above places over the figures given for 1916. But the tendency of many other cities is just the reverse, and causes an average decrease of about ten per cent. thruout the country for the first five months of 1917, as compared with the same period last year. Chicago is over $10.000,000 shy of 1916 figures, and New York shows a loss of $43,000,000.

Many of the material dealers and manufacturers, however, have welcomed the slow down in building, hailing it is a good thing. They were running too far ahead of capacity, and could not fulfill their promises for delivery. The figures below show comparisons for the first five months of 1917 and 1916:

	First Five Mos. 1917	First Five Mos. 1916
Akron, Ohio	$ 7,403,637	$ 2,904,047
Baltimore, Md	3,463,303	3,815,236
Birmingham, Ala	803,937	901,098
Boston, Mass	27,345,000	25,664,000
Buffalo, N. Y	3,165,000	4,051,000
Canton, Ohio	1,638,060	1,805,905
Chicago, Ill	36,062,500	52,028,100
Cleveland, Ohio	10,371,810	10,205,220
Cincinnati, Ohio	6,081,470	4,189,935
Columbus, Ohio	1,937,230	3,684,065
Dayton, Ohio	2,760,400	1,518,067
Detroit, Mich	19,749,930	18,145,845
Erie, Pa	2,199,059	852,026
Grand Rapids, Mich	899,786	1,358,155
Hartford, Conn	3,463,453	3,450,398
Kansas City, Mo	5,528,180	4,505,755
Los Angeles, Cal	10,754,951	6,831,219
Louisville, Ky	903,900	1,239,463
Memphis, Tenn	1,286,065	1,257,495
Milwaukee, Wis	5,599,180	6,079,221
Minneapolis, Minn	3,496,115	8,908,703
New York City and boroughs	54,030,867	97,213,931
Oakland, Cal	2,094,096	2,326,238
Philadelphia, Pa	18,241,465	15,646,935
Pittsburgh, Pa	4,718,713	5,666,592
Richmond, Va	2,081,353	2,210,161
Rochester, N. Y	2,954,102	3,998,614
San Francisco, Cal	8,624,850	8,075,848
Seattle, Wash	3,403,620	2,579,180
St. Louis, Mo	7,229,761	5,583,180
St. Paul, Minn	3,262,337	4,634,988
Toledo, Ohio	4,453,038	4,834,385
Youngstown, Ohio	1,673,355	1,476,832

CRESCENT
BELT FASTENERS

Are Durable

Which simply means they don't weaken the belt and don't wear out themselves.

If you like the idea, suppose you write us for Booklet 3E and get the whole story.

Crescent Belt Fastener Co.
381 Fourth Avenue, New York

Manganese Dioxide

All grades and sizes suitable for manufacture of manganese brick, also high grade ore for chemical, dry battery, paint, varnish and glass trades. Prices quoted upon receipt of inquiry giving full details as to analysis, size, tonnage, etc.

Crimora Manganese Corporation
30 East 42d Street NEW YORK

Blasting without using the
CYCLONE DRILL
is like hunting deer with birdshot. You can't possibly get good results.

We are ready to offer you facts and figures to prove that the Cyclone Drill will soon pay for itself.

Ask for names of users and Bulletin No. 4

The Sanderson-Cyclone Drill Co.
ORRVILLE, OHIO

They Do Produce Results

We refer to

Those little ads you have noticed in our Classified Ad Pages.

It is the decision of concerns who have used them. Try one.

Brick and Clay Record

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.

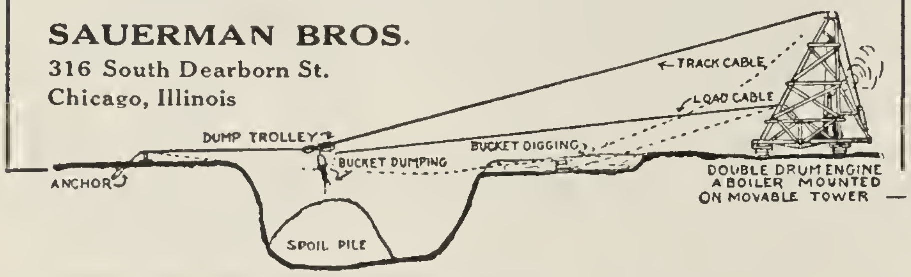
Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

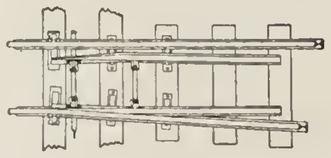
SAUERMAN'S
Dragline Cableway Excavator
Digs, Conveys, Dumps
in one operation—all operated by one man.
For stripping shales and digging clays.
It may fit your case exactly. Get the details from

SAUERMAN BROS.
316 South Dearborn St.
Chicago, Illinois

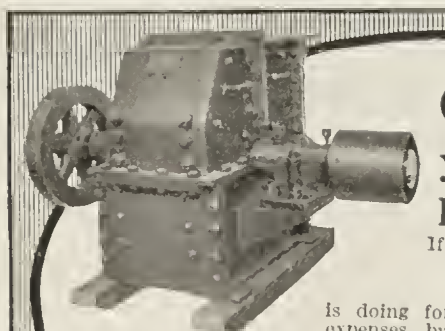


NOW IS THE TIME
to look over your railway supplies and be sure everything is in good shape. We have an immense stock of raw material and can ship promptly switches, crossings, frogs, switch stands, rail braces, tie plates, portable track, etc. Send us your next order.

Catalog C gives complete details



The Cincinnati Frog & Switch Co. Cincinnati Ohio



Cut your power costs
If you haven't heard what the
K-B Pulverizer
is doing for others in cutting down running expenses by using less power, let us send you figures on what you want to crush.
Built entirely of steel with manganese steel linings, the K-B will meet the most severe service requirements.
Write us for proof.
K-B Pulverizer Co., Inc.
86 Worth St., N. Y

QUESTIONS

A Two Cent Stamp May Bring
You Advice That Will Stop
a Waste, Improve Your Ware
or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

Niggerheads Troublesome in Crushing

827. *Illinois—We are up against a hard proposition in crushing our shale. The average height of our shale bank is about twenty-two feet. It is a blue shale of medium hardness. We loosen it in the bank by heavy shots of dynamite and it is loaded by a steam shovel into steel dump cars, from which it is dumped into a double jaw crusher, each jaw having a receiving capacity of 11 x 26 inches.*

In the first place, the jaw openings are too small to receive the larger chunks of clay loaded by the steam shovel. When the cars are dumped the larger of these chunks must be broken by sledges before they will fit into the crushers, which means a large loss of time and money. When the shale becomes wet it is very sticky and the jaws fail to grip the larger chunks unless aided by bars. The fine material becomes very sticky and gums up the jaws.

This shale likewise contains niggerheads of sizes varying from very small up to four or five inches in diameter. They also vary in number in different sections of the shale pit. On account of these niggerheads we were unable to install a roll crusher. We must crush 450 tons of shale in nine hours, and with the present equipment we cannot reach that capacity under the most favorable conditions, altho this crusher was sold to have that capacity. We have installed grizzly bars to prevent the fines from going thru the crusher, but even with that aid we cannot get sufficient material thru. The jaw openings are set at two inches.

We would like to find a crusher into which we can dump the cars of clay direct, without fear of choking the machine or having the clay bridge in the jaws.

To be able to set forth a method or system that would cure all the evils mentioned in your letter is hardly possible. In the first place, a sticky clay will cause trouble on any machine, hence, this evil will always be present. With regard to the niggerheads, these will have to be picked out by hand in most any case except in the event that the clay containing them is soft enough to be crushed while the niggerheads are being thrown out at the same operation. This method is being followed at some of Chicago's brickyards, where large nodules of limestone occur interstratified with the clay. The method followed in this case is to put the material thru conical rolls where the angle of "bite" is such that the clay is "swallowed" while the nodules are thrown off. This process, of course, can be used only in cases where the clay and the niggerheads differ in hardness so that the difference in their angle of "bite" can be made use of.

⁂

Tile Crack Badly in Drying

826. *Illinois—We have just completed a small drain tile plant and are in sore trouble. For drying our ware we have*

and ANSWERS

Best Authorities in Every Clayworking Branch are Called into Consultation — Their Advice is Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

---

constructed a "hot floor" of concrete, containing steam heads connected with four-inch drain tile, laid on eight-inch centers. The floor, which is heated by exhaust steam from the engine, gets so hot that one cannot hold his hand upon it; it has ruined practically all of the ware that has been laid upon it.

We have tried to dry our ware upon it by the following methods: By placing the tile directly upon the floor; by placing sand between the ware and the floor, and by raising palets four inches, six inches, twelve inches, and two feet above the floor. In every case the ware cracks badly within an hour after it has been set. The machine makes perfect ware, at least up to eight inches, which is the largest size which we have manufactured. The clay occurs in a bed which is eight feet deep, and which begins at the grass roots. It is very tough and plastic and contains no sand, lime, gravel, or other objectionable matter so far as we can see. It pugs and works nicely thru the machine, making a perfect tile, the column standing up well and being easy to handle.

We have made about 40,000 pieces since our plant was placed in operation, and of this amount fully ninety per cent. has been ruined in the dryer on account of cracking at the ends. We have placed some pieces off the floor for air drying which have not cracked nearly so badly nor quickly as those which have been dried over the floor.

It is a difficult task to state the cause of the trouble due to tile cracking without being out on the job to look over the various details. The difficulty may be due to:

(1) Clay.
(2) Tempering and Mixing.
(3) Machine.
(4) Cutter.
(5) Dryer.

1. CLAY

From all appearances the trouble lies in the clay. It appears that the clay is a very fine grained, fatty clay which is too dense to allow for proper drying. The water which is added to the clay to make it plastic must be driven out again in the process of drying, and it may be that the dense structure of your clay prevents the flow of the water from the interior of the ware from keeping up with the rate of evaporation from the surface, thus allowing the surface of the ware to dry sooner than the interior. Since clay always shrinks upon drying, the above conditions will cause strains to set up in the ware and cause it to crack.

This difficulty may be remedied by opening up the structure of the clay by adding some kind of a non-plastic material such as sand, broken brick, ground up culls, or small gravel if it is not limey. The above substances should be added in the process of grinding, or previous to putting into the pug mill, the amount vary-

The Illinois Brick Co. . . SAYS . . .

Jan. 8, 1917.
Illinois Boiler Compound Co.,
Chicago, Ill.
Gentlemen:—About ten years ago, we began using your compound. We have found it to surpass all other compounds, and do cheerfully recommend it.
Yours very truly,
Illinois Brick Co.

Applied once a month, our compound will prevent pitting, foaming, corrosion, and scale formation, consequently increasing the life and efficiency of your boiler. Let us ship you a trial case, **to be paid for only if your engineer is satisfied.**

The Illinois Boiler Cleaning Compound Company
127 North Dearborn Street, Chicago
Send for a trial case T-O-D-A-Y

Send for a Can Today

Get This Can on TRIAL

Keep your belts from slipping. Don't let them rot.

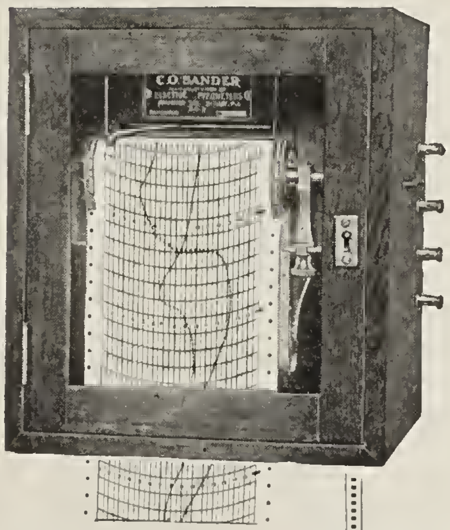
"SERO" Belt Dressing

makes them efficient.

"Sero" on your belts reduces the power consumption and prolongs the life of the belt.

Sero Specialty Co., Cleveland, O.

We also make "Sero" Gear and Cable Coating and Manila Rope Dressing.



SANDER PYROMETERS

Surprisingly low in cost, and yet well made, sturdy and accurate.

The smallest plant can use them efficiently and many dollars will be saved in coal and labor reduction. Ask how.

The Sander Instrument Co.
136 19th Ave. Irvington, N. J.

B. & B. Two-Bucket Aerial Tramway

requires but one man for its operation, reduces cost of hauling clay and shale to a few cents per ton.

Outline your haulage conditions and we will gladly estimate the cost and possible savings to you.

Ask for Catalog No. 16.

Broderick & Bascom Rope Company
St. Louis, Mo.

SIL-O-CEL
PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway CHICAGO Monadnock Bldg PITTSBURGH Oliver Bldg LOS ANGELES Van Nuys Bldg SAN FRANCISCO Monadnock Bldg

Write nearest Office for Samples and Information

The "Rust Special" Clay Feeder

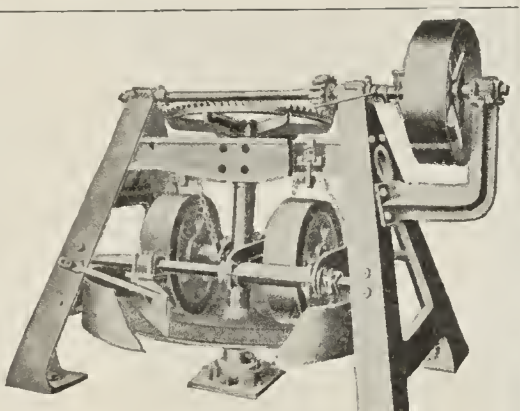
is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

THE EAGLE DRY PAN

Write for Prices

EAGLE IRON WORKS DES MOINES IOWA



Base Metal Couples and Low Resistance Instruments are absolutely unfitted for use on Clay plants.

We do not and we will not sell that class of equipment for measuring temperatures exceeding red heat.

STUPAKOFF PYROMETERS

for high ranges of temperature are equipped only with rare metal couples and high resistance galvanometers. They are dependable and we guarantee satisfaction.

The Stupakoff Laboratories
Pittsburgh, Pa.

ing with the properties of the clay. Experimenting will have to be done along this line and the amount of non-plastic material added be varied from five to thirty per cent.

2. TEMPERING AND MIXING

In tempering the material the body may be too stiff. The body may require more water than is added even tho the tile can be run out of the machine with less water. In mixing and tempering add grog or non-plastic material in the form of sand, ground up brick or culls, or fine gravel provided it is not limey. Hot water used in tempering in many cases has been found to help prevent ware from cracking in drying. Run a steam pipe in your mixing machine to heat up the clay. Hot water has a higher vapor pressure than water at a lower temperature, hence evaporation will go on easier and at a faster rate.

3. MACHINE

Even tho your ware does come out of the die to all appearances in perfect shape do not let this prevent you from looking to this source as the cause of your trouble in drying. If your core is off center, and this is often not noticed until a tile is examined closely, you may have the answer to the difficulty, for if one part of a tile is thicker than another, the thicker portion will dry at a slower rate and lead to longitudinal cracks on the ware. If the bridge is too near to the nose of the auger, trouble will ensue.

This may be corrected by placing a wooden washer of about 2 inches in thickness between the barrel of the auger and the die. This is a rare case and should be used only as a last resort. If the bridge is worn smooth it will cause the clay to have a slickened surface which will not heal up again upon passing thru the die. This will also lead to longitudinal cracks on the tile. By wrapping some wire around the bridge it will tear up the clay and prevent the above conditions from resulting. Care must be taken, however, not to wrap too much wire on the bridge since this may cause back pressure on the clay and produce excess power consumption.

4. CUTTER

The platens on the cutter are sometimes a source of trouble in drying. If they fit too snugly the shape of the ware may be distorted and the ware crack during the process of drying at those places where the clay was bent. Too frequently the men in handling the ware from the cutter think that the tile are sound and perfect and are inclined to toss the tile about. This rough handling of the ware is almost sure to pop up into some kind of trouble later on.

5. DRYER

The drying conditions may be too severe. In this plant it seems that the floor is too hot and not enough circulation of the air is had to properly dry the ware.

A suggestion which comes to mind is to change the type of auger. If you have a single wing auger try a double wing auger or even a triple wing auger.

We should advise that you make your dryer a unit proposition. Divide your floor up into spaces that will take care of a day's run and control the steam in each one of these spaces separately by means of valves. Fill up one of these units with green tile and then turn on your steam gradually and at a uniform rate until a temperature of around 180 deg. Fahr. is reached. Take about three days in reaching this temperature. You may have to turn your tile at least once during the early stage of drying. Undoubtedly you will find that the ware will dry best when set on pallets.

Since it is quite apparent that the trouble at your plant is with the clay it might be added that the following methods are employed on some plants to treat their clay to prevent it from cracking in drying. One method which has been of help to the fat clays of Minnesota is to preheat the clay to a temperature of 400 to 500 deg. Fahr. This will of course add to the expense of manufacture. Another method in use, especially in Iowa, is to add five to ten pounds of common salt to a ton of clay during the tempering process. This quantity of salt will frequently improve the drying qualities of the clay materially.

⁂

Cheaper Mining Method Wanted

824. *Alberta—We are manufacturing a red press brick. Our material is a hard shale which we mine about forty-five feet underground. We use forty per cent. dynamite for blasting purposes and work on the stall and pillar method, making entries about sixteen feet wide and fourteen feet in height (the height of the seam). Could you suggest a system or machine which would get this out in better shape and at less cost than our method of hand mining? We pay 42½ cents an hour for laborers underground and prices of explosives and timber are getting so high that it is costing us too much to win our raw material. Any suggestion that would cheapen the winning of the raw material would be much appreciated.*

After making some investigation and study of your problem, as outlined in your letter, we are unable to find much that would be of advantage to you.

A "Shortwall"* mining machine might be employed to undercut the clay, thus lessening the amount of drilling and explosives required, as well as cutting down the time required, or a breast machine might be employed, which would obviate the necessity of explosives and drills. Much depends, however, upon the character of the raw material as to whether these machines are practical or not. A gritty material would cause excessive wear on any such machines as named above, and it is very doubtful if any economy can be gained since a "Shortwall" mining machine costs in the neighborhood of $3,200, while a breast machine costs $1,950, excluding the cost of power.

Dynamiting a material loose is recognized as being cheaper than picking it or breaking it down by mechanical means.

A point worth while mentioning, is, that frequently a miner practices the false economy of using too little dynamite. He should not be afraid to dig deeper holes, and use more dynamite. In using any explosive, it should be well tamped way up to the top of the drill hole. When you have a sharp report and the rocks fly in all directions, you have an indication that you have been using too much dynamite, but if you get a deep "boom," and the material falls right down in front of the face of rock, you know that you have the correct amount of explosive.

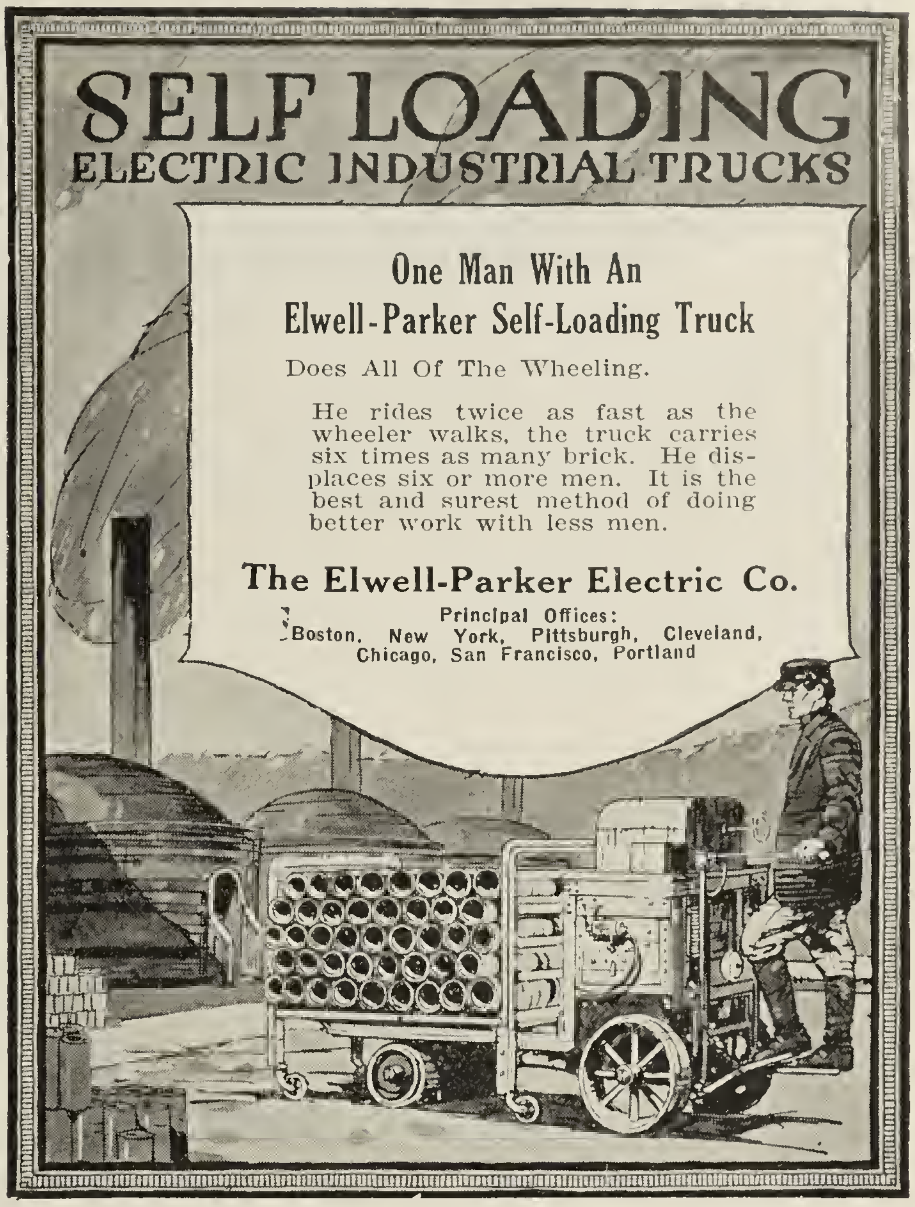
⁂

Burning Brick and Tile in Down Draft Kilns

825. *Alabama—We are writing for information as to whether drain tile and brick can be burned successfully in round down-draft kilns with wood as fuel. We can get wood delivered on our yard at $1.75 per cord, and coal costs us $5.50 per ton, f. o. b. our track. We are using thirty-foot kilns and*

---

*We will be glad to supply the name of the manufacturer of this machine to any who are interested.


SELF LOADING
ELECTRIC INDUSTRIAL TRUCKS

One Man With An
Elwell-Parker Self-Loading Truck
Does All Of The Wheeling.

He rides twice as fast as the wheeler walks, the truck carries six times as many brick. He displaces six or more men. It is the best and surest method of doing better work with less men.

The Elwell-Parker Electric Co.
Principal Offices:
Boston, New York, Pittsburgh, Cleveland,
Chicago, San Francisco, Portland

DUPLEX RESERVE POWER
ASSURES DEPENDABILITY
IN EXTREME EMERGENCIES

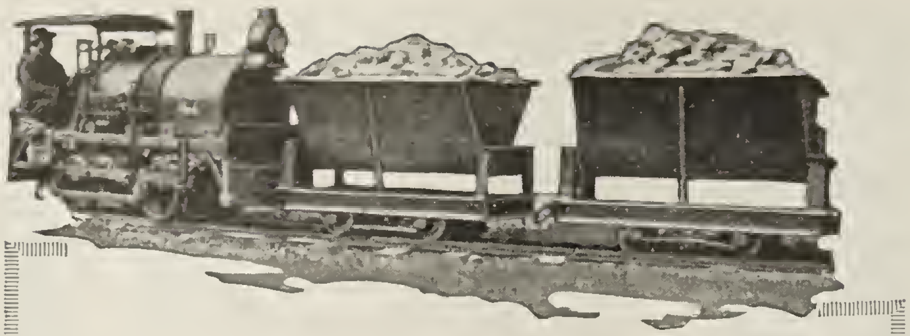
The tremendous reserve power of the Duplex—the original 4-Wheel Drive 3½-ton Truck—is applied four times more effectively than is possible with any other type of motor truck.

One source of Duplex dependability, under most adverse road conditions, is found in the range of gear reduction made possible with the Duplex Chain Case, which gives the Duplex a drawbar pull four times greater than that of any rear-wheel drive truck.

The Duplex, shown above, hauled the large oil tank, weighing 8½ tons, a distance of 30 miles, through sand and mud, and up steep hills. The Duplex clearly demonstrated that it is equal to any hauling emergency.

Let us send you our 1917 catalog and give you haulage facts and figures for your particular business. Address all communications to Dept. 128.

DUPLEX TRUCK COMPANY LANSING, MICHIGAN



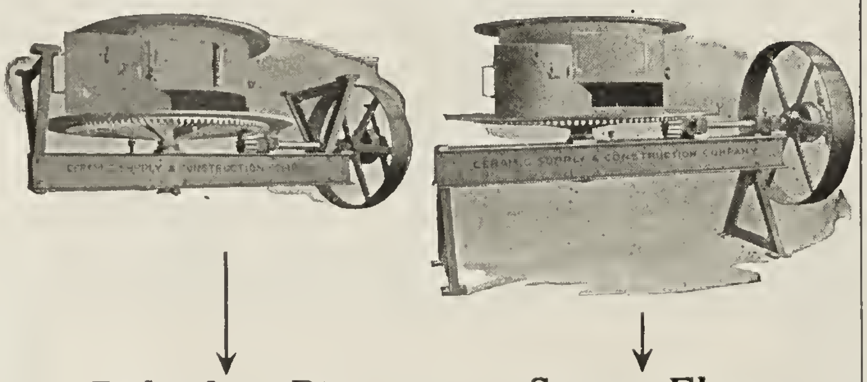
The
Bell Steam Locomotive
Hauls Clay

cheaper, farther, longer hours, with less trouble and repair than any other industrial locomotive built.

It burns kerosene oil costing NINE CENTS PER GALLON—no licensed engineer is required. Make us prove it to your satisfaction. Write

Bell Locomotive Works, Inc.
30 Church Street New York City

Save Labor
Feed Your Clay Automatically


CERAMIC SUPPLY & CONSTRUCTION COMPANY
CERAMIC SUPPLY & CONSTRUCTION COMPANY

Bolted to Bin or Set on Floor
(Either Way By Merely Reversing Two Brackets)

No Obstructions Under Disc
Feeds Anywhere Desired

The
Ceramic Supply & Construction Co.
COLUMBUS, O.
SCREENS — KILNS — OHIO DRAFT GAUGE

are using solid slanting grates. We were thinking of building to these furnaces, horizontal furnaces capable of receiving two lengths of our-foot wood. We thought it would be necessary to double-rick the wood in order to get sufficient heat. Do you think that is necessary? We would appreciate any information you can give us on this subject.

No matter how you set the ware, you will find it difficult to burn brick and tile in the same kiln. Do not, under any circumstances, attempt to burn a kiln where the brick and tile are separated—that is, where one-half of the kiln is set with tile, and the other half with brick. Some of us have tried to do this in the past, and have found that the tile setting was so open as compared with brick that sufficient heat could not be obtained thru the brick to burn them hard. The draft in such a method of setting always has a tendency to travel for the most part thru the tile, usually over-burning them.

There is a second possible method of setting in which the tile are placed in the lower part of the kiln and the brick on top of them. While this method offers the least trouble in burning, the loss in kiln-marked and cracked tile is out of proportion to the result obtained.

A third method, that of setting the brick in the lower courses and the tile in the upper courses, is productive of the least amount of kiln-marked and cracked ware, but it offers some difficulty in the burning. If an ordinary course is followed in the last mentioned operation overburnt tile are bound to result. This is due to the necessity for getting the heat down to the brick in order to burn them hard. In doing this, as above mentioned, the tile are usually over-burned. The third method mentioned, however, is the most practicable and with a little care in burning, will produce the desired results. The fuel should burn with a long, lazy flame and the amount of excess air admitted to the kiln, should be reduced to a high point of efficiency. So much for the possibility of burning both brick and tile in the same down-draft kiln.

Now as to the question of your using wood instead of coal. Wood at the price which you mentioned certainly has the advantage over coal in the matter of cost. We figure that a cord of yellow pine is equal in heat value to a ton of ordinary bituminous coal.

With coal at $5.50 f. o. b. your track, wood is about three times as cheap as coal. We believe that you will make no mistake under the existing circumstances in burning wood instead of coal.

With regard to the matter of your adding new furnaces in your present kilns, such as would be capable of receiving two lengths of four-foot wood, presume that it would be necessary for you to extend these furnaces somewhat out from the kilns, because of their unusual length. This, of course, would result in some extra loss of heat, but presume that you could not arrange it any other way. Large grates and plenty of them, we think would be necessary, in order to maintain a uniform degree of heat of a sufficiently high temperature. We can only guess as to what you mean by double-ricking the wood in the furnaces, but presume that if you mean placing double the amount of fuel therein, that this would be desirable as an experiment at least.

* * *

R. F. Fisher Joins Officers Reserve Corps

R. Fenton Fisher, general manager of the Jamestown (N. Y.) Shale Paving Brick Company, has resigned to go into the federal service. Mr. Fisher holds a commission as First Lieutenant of Ordnance, Officers Reserve Corps, of the United States Army, and expects to be called into active service in the near future.

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host
of Interesting Happenings in the
Varied Fields of Clayworking

Personal

Richard Loynes, of Long Beach, Cal., a well known brick manufacturer and contractor, died at his home in that city in the latter part of June.

E. K. Shankel, of the firm of Shankel & Ziegler, brick manufacturers, at Pennsburg, Pa., sold his interest to C. M. Reed, who will become Mr. Ziegler's partner.

At the regular weekly meeting of the Evansville Rotary Club, at Evansville, Ind., on Tuesday, June 26, John Andres, secretary and treasurer of the Standard Brick Manufacturing Co., of that city, was named as chairman of the entertainment committee of the club for the ensuing year. Mr. Andres was one of the charter members of the Evansville Rotary Club, and from the start has been one of its most active members.

California

The Pacific Tank & Pipe Co. is planning to construct a hollow tile dry kiln at its plant on the banks of the tidal canal, in East Oakland, Cal., to cost $4,000.

H. M. Mitchell, an experienced brickmaker, is to be in charge of the large brick works of the Hilton (Cal.) Brick Co., near Santa Rosa, Cal., when the plant is reopened.

There has been a change of management in the Livermore (Cal.) Brick Works, and the California Brick Co., of Decoto. N. A. Dickey succeeds F. L. Myers as superintendent of both plants.

E. B. McNear has installed an electric drag line scraper at his brick plant at McNear Point, Cal. A very substantial increase in capacity has been realized thru the installation of this equipment.

The watch-tower of prosperity—the hollow tile silo—is soon to make its debut on the Pacific Coast. The Pioneer Brick Co., of Vislia, Cal., of which J. Etzenhauser is manager, has just contracted to erect the first two hollow tile silos in this section.

Just at this time, with most of the big contracts about completed and no new ones of note on the tapis, except those awarded and about to be given out by the United States Army and Navy departments, the brick companies of California are turning for business to the smaller contracts. The sewer pipe and tile manufacturers, on the other hand, are in touch with an era of large development which bodes well for the future.

Colorado

Since taking over the plant of the Montrose (Colo.) Brick & Tile Co. but a year ago, Harry Allen and son, L. R. Allen, have made many extensions and improvements, which have materially increased its capacity. During the past year, according to the new owners, the plant has turned out approximately 1,000,000 pressed brick, and 40,000 feet of tile, varying in size from five to twelve

A BRICK STORY

Perhaps it fits your case

Every brick that is bought from your plant to go into another man's wall is whose brick?

YOURS ALWAYS

Your future, the future of your plant, your reputation, is dependent on the action of that brick in every wall that you sell.

If it stays always a good brick in color and body, it is a perpetual advertisement beautiful —for you.

But, if it scums, if it shows up grey on a clear deep red, if it assumes in a few months a dirty-yellow-grey-whitish indescribable color, your reputation, your business is hurt.

It is your fault—yours alone—a result of carelessness or ignorance, or both, which does not mend matters.

The cure, the preventative absolute of scum is

ROLLIN'S BARIUM CARBONATE

and if you will write us, we will tell you all about it, and how easy and surprisingly cheap is the process applied at your pug mill.

ROLLIN CHEMICAL COMPANY
Inc.
Charleston, West Virginia
General Sales Agents
National Aniline & Chemical Company
100 William Street, New York City

The Maximum Gain

You can't figure it—neither can we, for it is too complex, and we have been watching the tabulated results for many years.

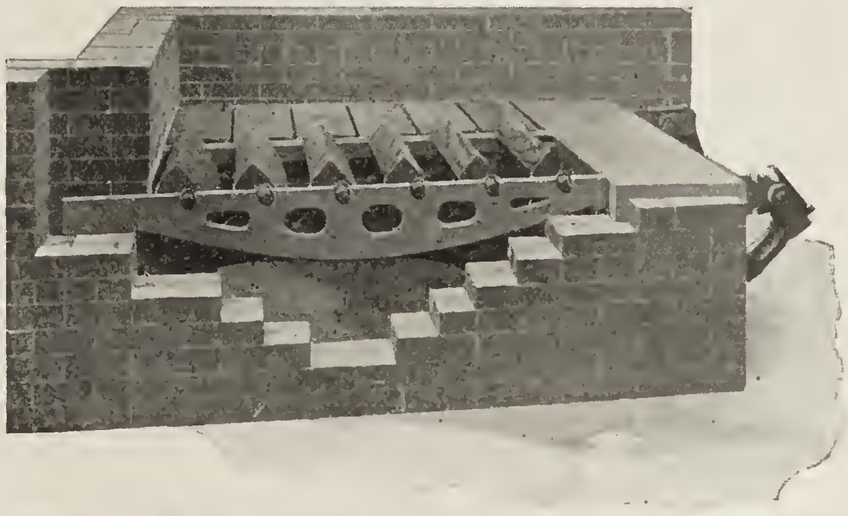
But—you can figure this: We guarantee absolutely and unconditionally that they will save you 10% of your coal costs, as a minimum.

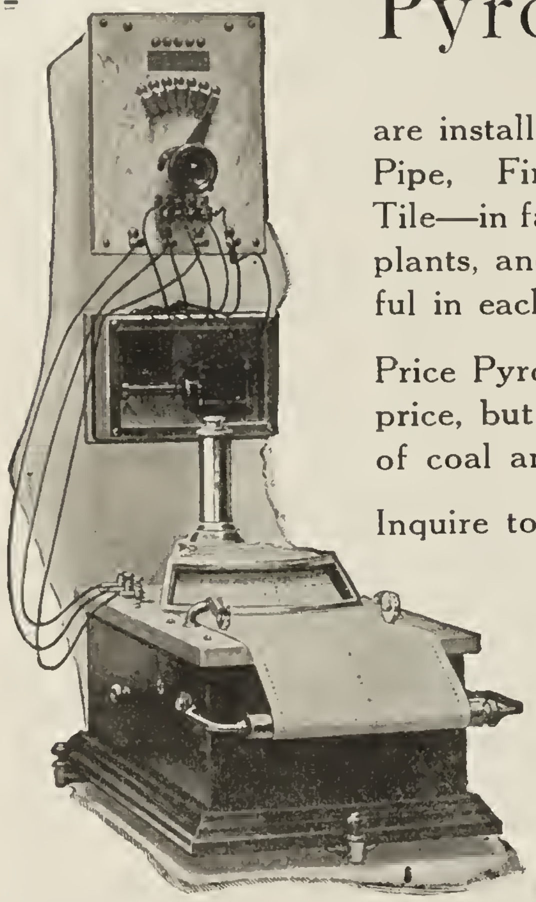
Cyclone Boiler Grates

will be sent to you on 90 days' trial with that guarantee.

This all means that the grates pay for themselves and put $300.00 into your pocket on the one item of fuel saving, in one year. Each year thereafter a saving of from $1,000.00 to $1,500.00 is secured on each boiler. Attractive? Demand the details from

The Cyclone Grate Bar Company
Buffalo, N. Y.





PRICE

Pyrometers

are installed in Brick, Sewer Pipe, Fireproofing, Drain Tile—in fact all kinds of clay plants, and they are successful in each single place.

Price Pyrometers are low in price, but sure do save tons of coal and hours in time.

Inquire today of

The Price
Electric Co.
12367 Euclid Ave.
Cleveland, O.

You won't have to worry about competition if you treat your clay with

R. H. Precipitated
Carbonate of Barytes

You can safely guarantee that your brick will be

Scum-Proof

You can get a higher price and influence architects to specify your product because Efflorescence is prevented absolutely.

But insist on the R. H. BRAND—it's dependable.

We have a complete line of high grade chemicals for the clay industry.

The Roessler & Hasslacher
Chemical Company
100 William Street New York

Chicago, Ill. Cleveland O. St Louis, Mo.
Kansas City, Mo. San Francisco, Cal. Philadelphia, Pa.
Boston, Mass. New Orleans, La
Cincinnati, O.

inches. A new drying shed has been added to the plant, and an additional kiln has been erected. An office is now under construction at the plant.

Connecticut

The average price of brick in Berlin at present is $12 per thousand on the cars, $15 per thousand on the job. Inasmuch as the freight rates increase 14 per cent. July 1 a rise in the price of brick is anticipated.

The Hotchkiss Brothers, of Torrington, Conn., now control the yards at Berlin formerly leased by them, and are making a number of improvements in the mechanical equipment. A new drag-line scraper has just been installed. A gasoline locomotive has also been added.

R. O. Clark & Son, of East Berlin, Conn., will shortly operate the yards at that point with electricity. Poles have been set for conveying the current from New Britain, and immediately after the alterations are completed the steam plant will be discarded. At the Merwin yards in Berlin a new steam locomotive has been placed in operation, and a steam shovel has been installed. An automatic soft-mud brickmaking machine has also been put in service at the Merwin-Berlin yards operated by R. O. Clark & Son. Similar equipment is to be installed at the Aetna yards controlled by the Clarks, according to present plans. A cable gravity carrier system has lately been added in the Clark yards at East Berlin, Berlin and South Windsor, for conveying raw brick to the drying racks.

Delaware

Realizing the acute housing situation in Wilmington, a syndicate of outside capitalists has just bought 135 acres of ground in the southern part of the city, upon which they will immediately begin the erection of 500 dwellings. It is an advantageous location, having a park on three sides and being in close proximity to the manufacturing district, tho far enough away to make the location desirable for homes for mechanics. A company has been formed, known as the New York-Delaware Realty Co., to prosecute the project, which will entail an outlay of $750,000. The officers of this company are: Arthur B. Koontz, of Charleston, W. Va., president of the company; Paul H. Irvin, of New York, vice-president; Maynard C. Perkins, of New York, treasurer, and Paul J. Newlon, of Charleston, secretary.

Florida

War time has no effect on the building of brick streets and other improvements in Sanford, Fla. At the present time many blocks of cement grouted brick streets are being laid and many more contemplated. From Oak Avenue west to French, from Magnolia to Palmetto, and from Tenth Street to Hughey and on the Sanford Avenue and from Pump branch on Second Street around Melonville Avenue to Celery Avenue have been paved within the past few months, making several miles of the best streets in the state. Palmetto Avenue, which is one of the fine residence streets, will now be paved from Second Street to Tenth Street and several cross streets will be added, thus giving Sanford a system of good paved streets that will be a great advertisement and supplement the good work already done in Seminole County in the way of brick roads.

Idaho

The newly constructed plant of the Nezperce (Idaho) Brick & Tile Co. has been placed in operation. The capacity of the plant is large enough to care for the wants of the prairie section which it serves. E. G. Bergh, president and general manager of the company, who has had much experience in the manufacture of clay products, has moved his family from Troy, Idaho, to Nezperce, where they will make their permanent home.

Illinois

The names of at least two Chicago brick companies appear on the list of Red Cross contributors compiled on Saturday, June 23, when the "I-Will" city's drive for a total of $8,000,000—its share of the national $100,000,000 fund—was drawing to a close. The Chicago Brick Co. contributed $500 toward this worthy cause, while the Bach Brick Co. donated $30.

Indiana

Brick manufacturers at Evansville, Ind., report business as being rather quiet in that city, altho a brisk out of town business is being done. There is little building now going on in Evansville, as compared to other years, and the demand for brick is not as active as it was at this time last year. The manufacturers are, however, optimistic regarding the future, and believe that conditions are going to improve.

The city of Evansville, Ind., is planning to build a railroad and traction station in Howell, a suburb, that will cost in the neighborhood of $100,000. The structure will be built of brick, and it will be one of the few municipal depots in the United States. It is expected that plans for the new building will be drawn in a short time. The new station will be used by the Louisville & Nashville railroad and by several traction lines. The purpose of Evansville in erecting this building is to beautify that part of the city.

The Standard Brick Manufacturing Co., of Evansville, Ind., has the contract to furnish the common brick for a new warehouse that is being erected by Bierhaus Bros., wholesale grocers, at Vincennes, Ind. The same company is also furnishing the brick for a new addition to the Blackford Window Glass Co.'s building at Vincennes. A new six-story brick bank building is also being erected at Vincennes, work on the same having started a few days ago. The newly completed common brick plant of the Standard Brick Manufacturing Co., located on the Evansville and Henderson traction line, near Evansville, is now running on a part time basis and will not operate to full capacity until business conditions improve. The other plants of the Standard Company in this section, however, are all being operated on full time.

Iowa

A very elaborate display of face brick is being erected by the Capital Clay Co., of Des Moines, Iowa, which recently purchased the huge plant of the Barber Asphalt Paving Co., in its office on the third floor of the Hippee Building.

E. M. Duke, formerly with the American Brick & Tile Co., at Mason City, Iowa, has been placed in charge as plant superintendent. Mr. Duke has had many years' experience in the business and declares his new field is a good one. It is probable that hollow brick and face brick will be made later at the plant.

Kansas

The Kaw Valley Brick Co. has been incorporated at Iola, Kan., with a capital of $25,000.

Have you a place in your plant where valves have to be opened and closed frequently, and saving of time and effort is desirable? That's the place to install

Jenkins Bros.
Quick Opening
Globe and Angle Valves

One complete turn of the handle, and your valve is wide open.

The spindles and bonnets are quadruple threaded with a thread of coarse pitch for quick opening and closing; otherwise the valves are of same high-grade steam metal, have long-wearing manganese bronze spindles, and Jenkins Renewable Disc feature, as in the standard pattern Jenkins Bros. Globe and Angle Valves.

For cold water service, valves have Jenkins No. 93 Discs; for hot water and steam, Jenkins No. 119.

REG. U.S. PAT. OFF. TRADE JENKINS MARK Jenkins Bros

Jenkins Bros.
80 White Street, New York. 524 Atlantic Avenue, Boston.
133 N. 7th Street, Philadelphia. 300 W Lake Street, Chicago.
Jenkins Bros. Limited, Montreal, Canada, and London, E. C. England.

REG. U.S. PAT. OFF. TRADE JENKINS MARK Jenkins Bros

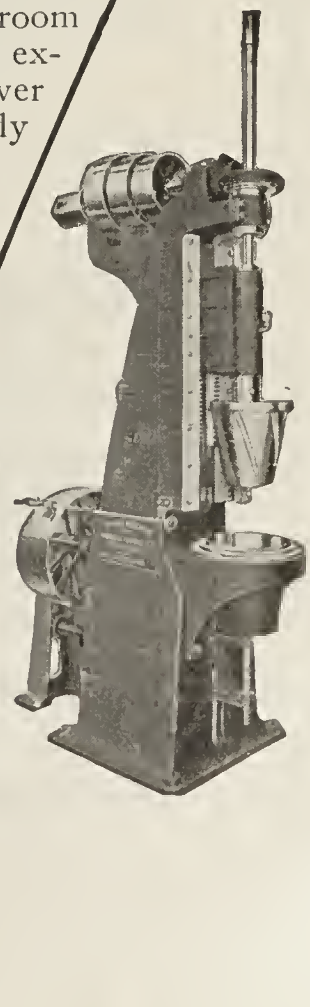
A bi-product that is profitable

Place the machine off in one corner of your plant, and let it absorb the spare time of your machine room men. They soon become expert, and a stock of flower pots quickly collects, ready for the kiln.

It is almost pure velvet—a bi-product—a sure seller with a manufacturing cost low enough to insure a goodly profit.

Send us sample of your clay and let us show you what our flower pot machine will do.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.



You Can't Fool A User
— of —
HETTRICK BELTING

He knows that in actual everyday performance the Hettrick belt does its work with perfect ease. He knows it sticks—does not slip—and it lasts. He knows it is proof against water, oil, dust, sudden jerks, over-loading.

Try it—you, too, will find that **Hettrick Red Stitched Canvas Belting Beats Them All.**

Used daily in scores of brick plants for transmission, elevating and conveying.

THE HETTRICK MFG. CO.
TOLEDO, OHIO

Gold Medal Award

Panama-Pacific Exposition
for
THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Their Merits are Vouched for by
Hundreds of Satisfied Users
Ask for our New General Catalog No.8

THWING INSTRUMENT CO.
3336 Lancaster Ave. - Philadelphia, Pa.

In anticipation of a coal shortage next winter, the state of Kansas will probably utilize every available man in the prison mines at Lansing this summer. Sixty men now working in the prison brick plant may be sent to the mines. At present 120 tons of coal are required each week in the operation of the brick plant. This fuel could be saved and an additional 600 tons a week produced if the brickmaking plant was closed and the men sent to work in the mines.

A one hundred-acre tract of land, said to contain rich deposits of clay suitable for the manufacture of brick and pottery, has been purchased by Walter McGinnis, of Eldorado, and Fred Wark, of Toronto, Kan., five miles northwest of Clearwater, near Wichita, Kan. Upon this site the new owners plan to erect a huge plant for the manufacture of clay products. Mr. McGinnis stated that a stock company is to be organized immediately, with a capitalization of $100,000, for the purpose of constructing the plant. Not only will the company engage in the manufacture of pottery and cruder clay products, but it will also sell the raw material to points thruout the country. Mr. McGinnis is well known thruout Kansas as a wealthy oil operator.

Kentucky

Formal notice has been given by the Katterjohn Brick Co., of Paducah, Ky., that the company is closing up its business.

The city ordinance creating a fire zone in Maysville, Ky., has been upheld by a recent decision of the Court of Appeals of Kentucky.

Lexington, Ky., is to have a new ten-story hotel in the near future, according to an announcement made by the management of the Phoenix Hotel. This organization proposes to build the new structure and operate it in connection with the present building, tho as a separate enterprise. It is to be a ten or possibly fifteen-story building, of fireproof construction and will have about three hundred rooms.

The Central Brick Co., of Louisville, Ky., has been incorporated with a capital of $20,000, by J. M. Bradbury, F. C. Goodwin and H. H. Bradbury. It is understood that the company will deal in brick and other building materials and do a contracting brick construction business. Mr. Goodwin is president of the Modern Construction Co., with offices at 733 Thirty-first Street, while J. M. Bradbury is secretary-treasurer of the same company.

A very definite stimulus to building operations has been felt in Louisville, Ky., since the second week in June, due directly, it is believed, to the prospective benefits the city will derive from the establishment of the army mobilization camp. Practically all of the large building projects that are ahead have been postponed for the time being, due to various considerations, and it is the smaller projects which are originating the business. The manufacturing trade, however, is handling capacity business; in fact, it is booking more than it can handle for shipment outside of the city.

For a time it looked as tho the government was going to want the property of the Hillenbrand Brick Manufacturing Co., of Louisville, Ky., for a part of the camp site. Representatives of the Louisville Board of Trade inspected the property, which the company expressed a disinclination to sell unless it was really needed. The company's plant is located just at the edge of the camp and the Hillenbrand company will shortly have about 50,000 soldier boys for neighbors. The company is booking numerous good orders for future delivery and will soon resume operations at the plant, which has been shut down for repairs.

The Louisville (Ky.) Fire Brick Co. is now booking orders for 1918 delivery at prices conditional on the market at the time of delivery, which itself will be governed by the car supply and traffic conditions. An ever increasing demand for the company's products is noted with the shipping difficulties worse rather than better, according to J. H. Bell, sales manager of the company. Mr. Bell, in anticipating the future, said that the present demand would be continued as long as there was a need of fire brick such as war conditions involve and that the demand would be continued long after that time, in view of the fact that a year's run would likely be necessary to restore the reserve stocks in the hands of the manufacturers and dealers. At this time, he said, there is no reserve store of refractory materials anywhere.

Louisville's Real Estate Exchange has brought its Buy-a-Home-First campaign to what is considered a very successful close. It was realized at the outset that the campaign was disadvantageously timed, in view of the large number of campaigns which have been in progress in the city from Liberty Loan to Belgian Baby campaigns, but as long as it had been prepared for, the real estate men determined to see it thru. They undertook to start in a small way, with a special section in one newspaper and daily readers for a period of two weeks. The army camp was awarded to the city meantime and that gave the relators something to use for a talking point. The campaign gained strength as it progressed and special sections were used in all of the five newspapers, advertising appropriations being constantly increased. Sales and prospects were reported in large numbers. Among the sales were many of vacant lots, promising well for the future.

Sewer pipe business with the P. Bannon Pipe Co., of Louisville, Ky., is due to be crowded as a result of the demand that will come from the army camp. The plans for this camp, which will be made larger by one-half than the original expectations, include extensive sewerage work, with elaborate systems of connections from the pools and drains and wash houses, kitchens, etc. The city and county are constructing a sewer to empty into the Louisville sewer system and the Louisville Water Co. will construct a main into the camp to supply its needs. Foreign business of the P. Bannon Pipe Co. is oversold, according to A. P. McDonald, sales manager of the company, with the car supply much improved and orders going out into the state and to the north of the Ohio River better than for a long time. The company is in line to lose one man, B. J. Madden, to the next Officers' Reserve Training Camp. Mr. Madden has passed the preliminary tests and been accepted and is likely to be called in due time.

Massachusetts

The Worcester Brick Co. is erecting a large new storehouse at its West Auburn (Mass.) plant.

The property of the Bridgewater (Mass.) Brick Co., together with buildings, machinery, etc., has been taken over by the F. L. Stiles Co., of North Haven, Conn.

Massachusetts brickyards, in common with those in other sections of New England, are having their storage facilities taxed to the utmost, deliveries being seriously hampered by the inability of contractors and builders to secure the necessary structural steel to proceed with their work. Practically all of the yards are well supplied with orders and are work-

Marion

Steam Shovels, Dredges, Draglines and Kindred Machinery

IT was no joke—digging tough, lumpy shale like this, and the Moberly Paving Brick Company, Moberly, Mo., really couldn't blame its pit men when they seized every excuse for laying off the job of loading it by hand.

But as that didn't make up for irregular production, the Company bought a "Marion." Immediately, a change!

"MARION" NEARLY DOUBLED THIS FIRM'S OUTPUT, WHILE REDUCING HAND LABOR

—effecting an increase from 40,000 "Missouri" Brick per day, to a capacity of 75,000 per day, with fewer men in the pit.

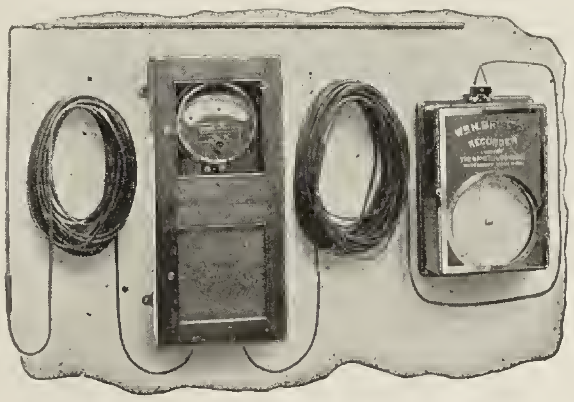
Perhaps we can help effect such economies in *your* plant. Write us the particulars; no obligation.

The Marion Steam Shovel Company, Marion, Ohio

Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle

ESTABLISHED 1884

220



TRADE MARK

BRISTOL'S

REG. U. S. PAT. OFFICE.

RECORDING PYROMETERS

BRING THE KILN INTO THE OFFICE

—right to the Superintendent's desk, giving him more time to do brain work.

The recorders bring him records in permanent form of the temperatures at the kiln. He can compare today's temperatures with that of yesterday, a month ago, or a year ago.

Down at the kilns an equal number of Bristol Indicating Pyrometers act as a guide for the burners. Team work of this sort eliminates all guess work and the resulting inefficiencies.

Suppose you allow us to show you how you also can increase team work and efficiency by the use of Bristol's Recording Instruments.

Write for Bulletin 163.

THE BRISTOL COMPANY, Waterbury, Conn.

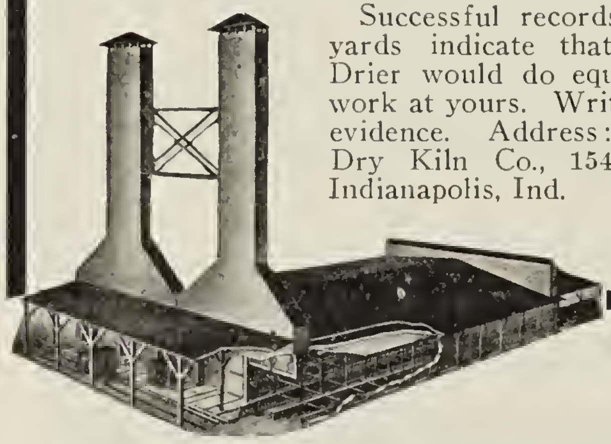
Branch Offices:—Boston, New York, Pittsburgh, Chicago, San Francisco

Applicable to All Clays and Steam Conditions

THE STANDARD Natural Draft Steam Drier is not a "one-clay" drier. The heating system is remarkably flexible in arrangement and application. The special requirements of any nature of clay—any steam conditions—are readily and adequately met.

It is simply a matter of varying the method of applying heating apparatus basically correct.

Successful records at many other yards indicate that The Standard Drier would do equally satisfactory work at yours. Write for convincing evidence. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.



The Pyrometer That Has Set A New Standard

In animate or in inanimate things, in man or in machine, the ability "to do it better" has always been sufficient cause for selection as the Standard.

THE BEIGHLEE PYROMETER

to those who know, has the ability and reputation for doing it better, and a new high standard has been set.

Let us tell you why, in our opinion, this pyrometer will save you money, then you use your own judgment.

Write the

BEIGHLEE ELECTRIC CO.

Cleveland, Ohio

Herman A. Holz
Hudson Terminal Bldg.,
New York.
Representative in
New England States.

ing steadily but the brick simply piles up on the premises awaiting shipment. Business has not been very brisk the past two weeks, but it will be sometime before those orders already booked are cleared up.

Michigan

The Helm Brick Machine Co., of Cadillac, Mich., recently increased its capital stock from $15,000 to $25,000.

The Jerome (Mich.) Brick Co. has been incorporated with a capital stock of $25,000.

The Saginaw (Mich.) Paving Brick Co.'s plant, which was closed during the winter months, has resumed operations. About fifty men are employed.

The Detroit (Mich.) branch of the Ludowici-Celadon Co., dealers and manufacturers of roofing tiles, is now comfortably entrenched in its new quarters at 302 Ford Building.

The Sandusky (Mich.) Brick & Tile Co. has started on its season's work. Thomas J. Moore is manager and Richard Winters is superintendent. The entire plant was recently overhauled, and the capacity of the same increased from 3,000 to 5,000 tile a day.

An unusually large order for face brick has been placed with four Detroit companies by the Michigan Telephone Co. The brick are to be used in the construction of the telephone company's new building on Cass Avenue, which will cost in the neighborhood of $7,000,000.

The Detroit (Mich.) Brick Sales Co., located in the Penobscot Building, reports that while the face brick business is good, it is not up to the mark of 1915 and 1916. This concern is furnishing part of the face brick to be used on the new main office building for the Michigan Telephone Co.

Minnesota

E. N. Rosengren, formerly associated with the Twin City Brick Co., Minneapolis, has been given the position of sales manager of the brick department of the Colburn Brick & Tile Co. Business is reported as very good, considering the uncertainty of the general building field.

Eugene Young, secretary of the Minneapolis (Minn.) Builders' Exchange, is enthusiastic just now over the prospects of having a modern twelve-story building ready for occupancy as the new home of the exchange within a year. The entire first floor will be given over to exhibits of brick, tile, hollow tile, roofing tile and other clay products as well as building materials of all sorts. The offices will be on the floor above the exhibits, and the basement will be turned over for exhibition purposes for machinery and equipment firms. The upper floors are to be leased to building contractors and engineers. Many of the brick and tile firms in Minneapolis now have small exhibits in the present Exchange building, but are planning to make their displays more elaborate in the new home. Other firms will join in the big display of clay products. In addition to centralizing the clay products for the prospective customer the plan will draw the men in the industry closer together as the rubbing of elbows is always a thing to be desired rather than shunned.

Jay V. Stewart, in charge of the Minneapolis (Minn.) branch of the Des Moines Clay Co., in the exhibit rooms of the Minneapolis Builders' Exchange, is optimistic as to the future of brick as a material for residences. "All the brick and hollow tile industries need," said Mr. Stewart, "is a live-wire promotion or sales scheme. The lumbermen of this country are losing no time in getting before the public the fact that there is plenty of pine and other lumber for homes. The prices of lumber are mounting. So are its sales. The great trouble is the average prospective home-builder dismisses brick from his consideration before the facts are presented to him. In fact, we frequently wake up to learn that our neighbor has built of wood without ever having had a brick salesman aware of his intentions. It had not been demonstrated to him that he could have had the walls of his home put up with hollow tile and brick at a figure so reasonably low that he would have chosen it in preference to other materials. The brick and tile men must get the facts before the public. It can be done in a large, nation-wide publicity campaign, and to my mind it should be done on a scale in keeping with the importance of the industries to be exploited."

Missouri

W. Pocock, secretary of the Brick Manufacturers' Association of St. Louis, states that local business has fallen off and is extremely dull at the present, but that out-of-town shipments are going on on about the same basis as formerly.

A contract has been let by the Walsh Fire Clay Products Co., to a St. Louis contracting engineering company, for the construction of an industrial village at its plant at Vandalia, Mo. The total cost of the village will amount to about $500,000.

L. G. Blackmer, of the Blackmer & Post Pipe Co., St. Louis, Mo., has gone to Atlantic City to attend a meeting of the American Society for Testing Materials. He will be absent about ten days, stopping at Washington, D. C., on his way home to confer about the matter of supplying sewer pipe for the cantonments planned for the new national army.

Nebraska

After several years of agitation over the type of pavement to be used upon the public square and adjacent streets the city council of Fairbury, Neb., recently decided, with but one dissenting vote, to use a vitrified brick surface.

New Jersey

The Homestead (N. J.) Brick Co., because of the coal shortage, discontinued the use of that material as fuel and has returned to burning wood, which is shipped from the hills above its plant.

Scarcity of labor is hampering operations in the Hackensack (N. J.) yards, and because of the impossibility of getting sufficient help, one or two have not commenced operations. At Paterson, but a few miles away, the manufacture of munitions is shortly to begin on an extensive scale, and this will inevitably lead to further depletion of labor forces thruout this region. Furthermore, the number of men subject to military duty will make inroads into the labor supply.

The Independent Brick Co. is operating three plants in New Jersey this season, one at Kinkera, one at Bordentown, and another at Fieldsboro. While the company makes only common brick it has no difficult in disposing of its product at relatively high prices. Its total output is approximately 160,000 a day or about 50,000,000 a year. At present it is supplying 2,000,000 brick for a large manufacturing plant being erected near Trenton. Its product is shipped to every important building center in New Jersey and Pennsylvania.

Look This Car Over Carefully

Note the way it is braced, and the manner in which it is put together. Stout and rugged, capable of resisting dipper hammering, big chunks dropped into it, derailments, etc. In addition it is Bottom Dump, it does not hammer itself to pieces when dumping.

The Youngstown Steel Car Company
Youngstown, Ohio

Your Fortune For Coal Or Use Canton Shaking Kiln Grates Which?

One of the very prominent refractory men says: "It is simply beyond my comprehension why otherwise good plants still use old methods. We are saving over 25% of our fuel with Cantons, amounting to thousands of dollars each season.

Get our bulletins.

The Canton Grate Co.
1706 Woodland Ave., Canton, Ohio
Southern Representative:
Mc BURNEY & JONES
Efficiency Engineers
829 Trust Co. of Ga. Bldg
Atlanta, Ga.

"SCANDINAVIA"
(Solid Woven Cotton Belt)

is the kind of belt that gets the preference from those clay-products manufacturers who are most particular about knowing the exact cost of operation in every detail.

"Scandinavia" always shows up so well when the manager looks over the cost figures that there never is any question as to the belt that will always have the preference.

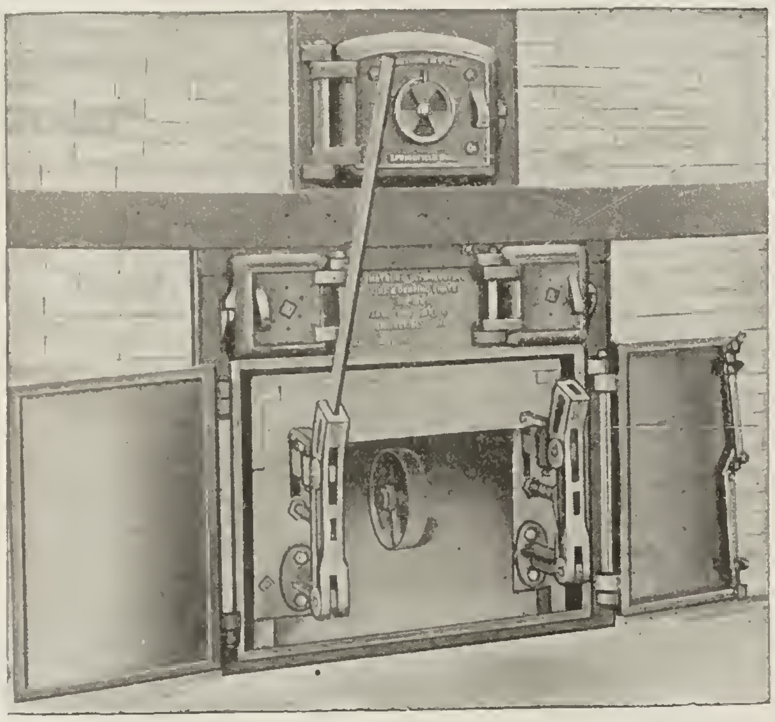
"Sandinavia" is the belt for you to use for power transmission—elevating and conveying.

Try it once and you'll be convinced

Scandinavia Belting Co.
106-108 Reade Street, New York

Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.

Canada: Federal Engineering Co., Limited, Toronto and Montreal.



Just one movement of the dumping device of the

Standard Interlocking Kiln Grate

entirely cleans the fire—clinkers as thick as six inches are easily handled.

This is only one of many points of superiority that make this the ideal kiln grate for every brick plant.

We install it at our expense—you give it a thoro trial—if it doesn't do all we claim we'll remove it without any cost to you.

Write for details and prices.

The Armstrong Manufacturing Co.
SPRINGFIELD, OHIO

The Hackensack (N. J.) Brick Co. is delivering its product with motor trucks within a reasonable distance and by so doing is overcoming serious transportation problems. The Hackensack company's sheds are located a long distance from a railroad, and the brick has to be ferried up to the cars on the Ridgefield Park side of the river in huge barges rowed by hand, or else hauled a considerable distance by team. To make delivery sure and quicker the company has a fleet of motor trucks, the first that any Hackensack brick concern has adopted.

New York

Brick and clay construction averted what might have been a disastrous fire in a fashionable Syracuse (N. Y.) apartment house recently. The blaze was discovered in the middle of the night but prompt action on the part of tenants coupled with the fireproof construction of the building kept the loss to a minimum.

With several Auburn (N. Y.) streets torn up in paving operations, all work was halted when a trainload of brick got lost somewhere between that city and New Cumberland, W. Va. Frantic telegrams were sent out to scores of points along the route, but the material could not be located. Finally, as a last resort, Mayor Mark I. Koon, of Auburn, started out to hunt it up. He stopped off at station after station, and finally located it. Then he got after the railway officials and personally conducted the brick to his home town. The paving work is now under way full blast. Other consignments are on their way.

After paralyzing building operations in Syracuse, N. Y., for several weeks the building laborers' strike has been settled by a complete victory for the workmen. The laborers were formerly receiving thirty cents an hour and struck for thirty-seven and one-half cents. The employers offered a compromise of thirty-five, but their suggestion was turned down. After holding off for several weeks they capitulated and the men went back to work. During the strike work on two new newspaper buildings, several apartment houses, and a number of industrial plants was practically at a standstill. Because of the shortage of labor in that section contractors were unable to get men to fill the places of the strikers.

The most ambitious school building campaign ever undertaken by Syracuse, N. Y., is now in full swing. More than a million and a half dollars will be spent for these institutions within the next few months. At the present time work has begun on the Delaware school, costing $350,000 and the Madison school costing $285,000. Bids are now being advertised for the Webster school, for which the common council has voted $125,000 and the Edward Smith school to cost $210,000. An addition is to be built to the George Washington school to cost $50,000. Work on the vocational high school is rapidly nearing completion. This building, which will cost more than $500,000, will be one of the best equipped and outfitted institutions of its kind in the country. In addition, plans for the Franklin school are being drawn, as well as plans for the new Porter school, to replace the one recently destroyed by fire. Additions and alterations costing about $50,000 are also to be made at Lincoln and McKinley schools.

Much complaint is heard along the Hudson River that up to the middle of June the season was the poorest in years for brickmakers. Because of the weather, many plants were unable to do anything worth while until that time, when the advent of good weather resulted in general resumption of activities. The case of the Malley Co., at

Nyack, N. Y., is fairly representative of what the yards encountered. The firm has five machines, and in all the time from the opening of the season until about the middle of June it made only thirty-nine pits of clay. Of course, that situation was very bad, and the outlook was anything but promising. However, it is now greatly improved, but the labor shortage is rapidly becoming a menacing feature. Transportation isn't quite so serious as it is in some localities, since the brick men control a towing company which takes their barges down the river. If they had to depend upon the railroads it is conceivable that the situation would be very much worse. Plenty of business is waiting for the brickmakers of the Hudson district, and trade is expected to improve as the season advances.

Ohio

W. A. Fay, president of the Cuyahoga Builders' Supply Co., Cleveland, Ohio, is recovering from an attack of grippe.

John Harms, of the American Face Brick Co., Cleveland, Ohio, was a business visitor in Columbus last week, calling on manufacturers and jobbers.

The Gaddis-Harrison Brick Co., of Columbus, Ohio, reports the sale of approximately 500,000 paving blocks and hollow brick for a large centralized school building near Columbus.

The Grove City (Ohio) Tile & Brick Co. has been organized with a capital of $10,000, by Armend L. Van Sciever, Frank Mellen, A. S. Mellen, O. Witteman and Ida Maxson.

The Barkwill Farr Co., Cleveland, Ohio, has begun the delivery of brick for the new Cleveland Hotel, now under construction at the Public Square and West Superior Avenue. This operation will require 4,000,000 common brick.

The Columbus Face Brick Club held its regular meeting at the Virginia Hotel, June 25, when methods of selling were discussed. The meetings and discussions are generally informal and nearly every one present takes part. Emmett Howard, sales manager of the Claycraft Brick Co., is president.

Considerable school work is going the rounds in Ohio, but up to date very few contracts for brick have been awarded because of the fact that construction bids are generally above the estimates of the architects. This is due to the heavy advance in price of all building materials. Some of the school jobs will be refigured and bids will again be invited.

Emmett Howard, sales manager of the Claycraft Brick Co., Columbus, Ohio, reports a slight improvement in the car supply, which is helping shipments to a marked degree. In fact there is a better movement on all clay products. Demand is slow but better times are anticipated now since the Liberty Loan is out of the way and builders will be able to get money for building purposes.

The Ohio Highway Commission opened bids June 27 for a number of road improvement jobs, among which was a half dozen stretches to be paved with brick. Municipalities are also awarding considerable paving altho high prices on materials and labor have caused many projects to be abandoned temporarily. The car supply for paving blocks has been improved to a certain extent and as a result work is progressing better.

Cleveland (Ohio) brick and clay interests have been active in the recent Liberty Loan and Red Cross cam-

You want

BURNING CONTROL

To get it—

You Need More Than Your Experience and Good Judgment

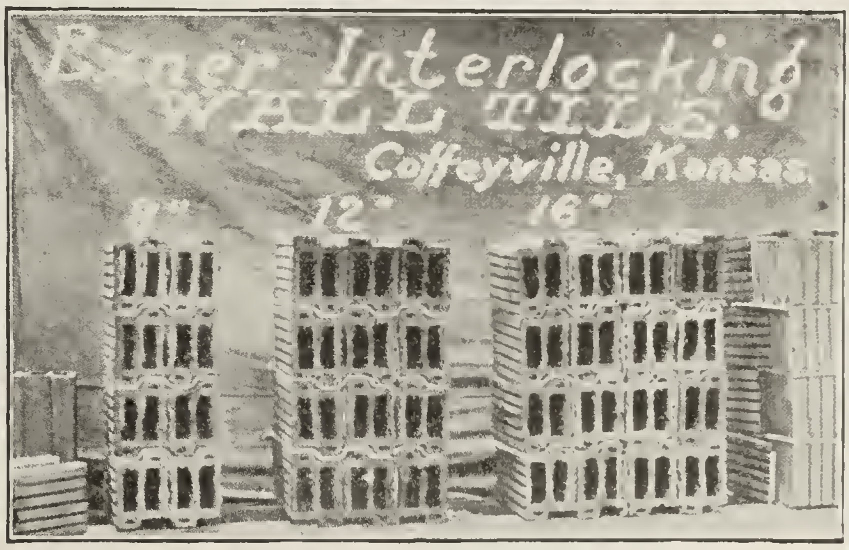
Why don't you try the Veritas System? It opens up entirely new methods of temperature control, it teaches you new points in burning that are not ordinarily evident, it indicates exactly, at any time, just what work the heat is accomplishing, it is always accurate and greatly increases the interest of the burners.

Such firms as the Cleveland Hydraulic Press Brick Co. and The Dover Fire Brick Co. are using it, and new high grade plants are added each week. We guarantee results or we won't install.

The Veritas Firing System Co.

Trenton, N. J.

and Herbert Forester, Box 37, Cleveland, O.



THE EXNER

A Better Hollow Block

It is easy to make and is a splendid seller. Both the mason and buyer like it. It is laid much more easily than other blocks and has a better appearance in the wall. Our own plant is about one-quarter of a million behind orders. Write for license terms and get this for your plant.

J. E. EXNER

602 Lincoln Street Coffeyville, Kansas

Patented in the U. S. A. and Canada

paigns. Ralph P. Stoddard, secretary of the S. A. F. E., was captain of a team soliciting subscriptions for Liberty Bonds, and the National Fire Brick Co. appears on a list of the principal buyers of bonds. The Hydraulic-Press Brick Co. was among the subscribers which aided Cleveland in oversubscribing her Red Cross quota of $2,500,000 by 100 per cent.

Face brick agents are looking forward to considerable new construction work at the Ohio State University later in the season. One of the buildings will be a woman's dormatory which will require a large number of brick. Another is a power house, for which brick from the state brick plant at Junction City will be used. Altho the state brick plant has been closed because of the high price of coal, it has a large stock on its yards which will be used largely for state work during the present season.

About four thousand people witnessed the destruction by fire of the factory of the Lima (Ohio) Clay Products Co., on June 7. Flames, originating in the dryer, swept unrestricted thru the plant, causing a loss of $15,000, according to an estimate made by A. McPherson, the proprietor. The office building south of the plant also caught fire, but by the efforts of a bucket brigade the blaze was extinguished and the structure saved. The fire department of Lima was practically helpless in stopping the blaze, because of a lack of water connections.

Demand for drain tile for war gardens and other agricultural purposes has depleted the supply available in Cleveland, Ohio, and manufacturers are speeding up production in an effort to catch up with orders. One of the plants of the Barkwill Farr Co. has been turned over exclusively to the manufacture of this product and several thousand tons will have to be made to cover present inquiries from dealers. There is some difference of opinion as to whether the clay interests have lost the opportunity to furnish tile for draining the military cantonments. Rumors come from Ohio iron centers that iron pipe is now being made for these purposes.

Oklahoma

A state brickmaking plant is being erected at McAlester, Okla., which, when completed, will have a daily capacity of 30,000 brick. The roadbed for the spur tract to be built to the plant has been completed and excavations for the building and kilns have been started. The machinery is expected to be delivered within sixty days. The main building of the plant will measure 150 by 300 feet and will be, in part, two stories high. The output of the plant will be used for the most part in the construction of state buildings.

Oregon

The Monmouth (Ore.) Tile & Brick Co., of which George Partridge is proprietor, placed its plant in operation recently. The company plans to manufacture 5,000 brick daily and to continue operations thruout the summer and fall.

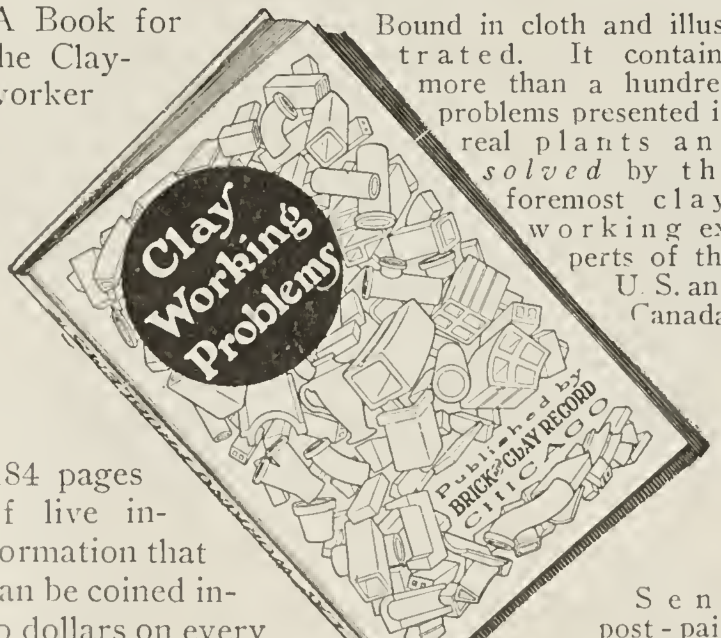
The Warrenton (Ore.) Clay Products Co. has placed its new plant in operation for the season. This concern manufactures hollow tile, drain tile, building brick, and other burned clay building materials, and receives its clay by barges from Fort Clatsop, a point situated along the Louis and Clark River. The first barge received this year contained 500 tons of clay.

Protects the Furnace Brick from Gases and Slags

New England Fire Cement is the cement that graduated from college. Science ordered: "An ideal refractory cement should vitrify at a low temperature in order to protect the refractory materials from corrosive slags and gases of the furnace." Our cement will do that. Professor Brown, Rudgers, Department of Ceramics, writes of New England Fire Cement: "It has a low drying and firing shrinkage. It will not tend to crack and flake off when applied to the surface of brick work. Its mechanical and working properties are very satisfactory."

We want Exclusive Dealers in Every City

New England Fire Cement Company, Inc.
240 Lisbon St., LEWISTON, MAINE



Clay Working Problems
Published by BRICK & CLAY RECORD CHICAGO

101 Questions Answered

A Book for the Clay-worker

Bound in cloth and illustrated. It contains more than a hundred problems presented in real plants and *solved* by the foremost clay-working experts of the U. S. and Canada.

184 pages of live information that can be coined into dollars on every clayworking plant.
Price $1.50

Sent post-paid on receipt of check, cash or money-order by

Brick and Clay Record
445 Plymouth Court CHICAGO

Pennsylvania

F. E. Coover has incorporated the New Cumberland (Pa.) Brick Co., with a capital stock of $100,000.

The Hamilton Developing Co. will erect a dozen new homes at Wyomissing, Berks County, Pa., using brick as the chief material in their construction.

Operations at the new brick plant being erected by the Kittanning (Pa.) Ceramic Co., at Laird Station, Pa., a mile and one-half from Craigsville, will, it is expected, be started the latter part of July. Work on the buildings is well along towards completion, the boilers have been placed, and constructional work on the six kilns to be built, is progressing rapidly. Harry McNeese, of Kittanning, is head of the new enterprise.

Baldwin Brothers, of Erie, Pa., have planned the erection of about 300 dwellings, mostly of the one-family type. They are to be built of various materials, but brick and terra cotta will predominate in their construction. All the two-family houses are to be of brick, trimmed with terra cotta. The cost of the houses will run from $2,000 to $5,000. They are to be equipped with all modern improvements, including tiled bath rooms and various other conveniences.

The Beaver Clay Manufacturing Co., of New Galilee, Pa., which recently started manufacturing fire brick of No. 2 quality, has appointed B. F. Johnson, Fulton Building, Pittsburgh, as sales representative for that district. The company will soon start work in another plant to be operated under the name of the Cannelton works. It is also the intention of the Beaver officials to install a new dry-press machine as the New Galilee plant, which will add largely to the output.

Fire brick manufacturers in Pennsylvania are enjoying the height of prosperity and were it not for an utter scarcity of cars their lot would be a happy one. Never before have prices equaled present selling figures. Makers of No. 1 brick in the Clinton County district are getting $50 a thousand, while No. 2 grade is selling for $40 per thousand. No. 1 Ohio grade is selling at $38 f. o. b. at works, and No. 2 at $30. Hundreds of orders, aggregating approximately 10,000,000 brick are being held up pending car shipments.

Tennessee

The capital stock of the Kingsport (Tenn.) Brick Corporation has been increased from $200,000 to $350,000.

Utah

John J. Rogerson, of Moab, Utah, has recently taken charge of the brick yard at Springfield, Utah, owned by B. R. Bush.

* * *

California Brickmaker Entertains Builders

The San Jose (Cal.) Brick Co. entertained a considerable number of San Francisco and Oakland contractors, builders and material men at their extensive plant on June 12. After a tour of the extensive plant under the guidance of O. W. Tupper, president of the company, the guests spent some time in recreation in the beautiful grounds adjoining the brick yard, and were then treated to an al fresco dinner cooked by San Jose's finest chef. Mr. Tupper was a most attentive host, and the day passed into evening with songs, speeches, and stories.

Hand Labor in Your Clay Pit?

WHY—it is unthinkable, it *simply must not be done*, those same men can be utilized in other parts of your plant in doing work that they will like better —if you will install the

Buckeye Clay Digger

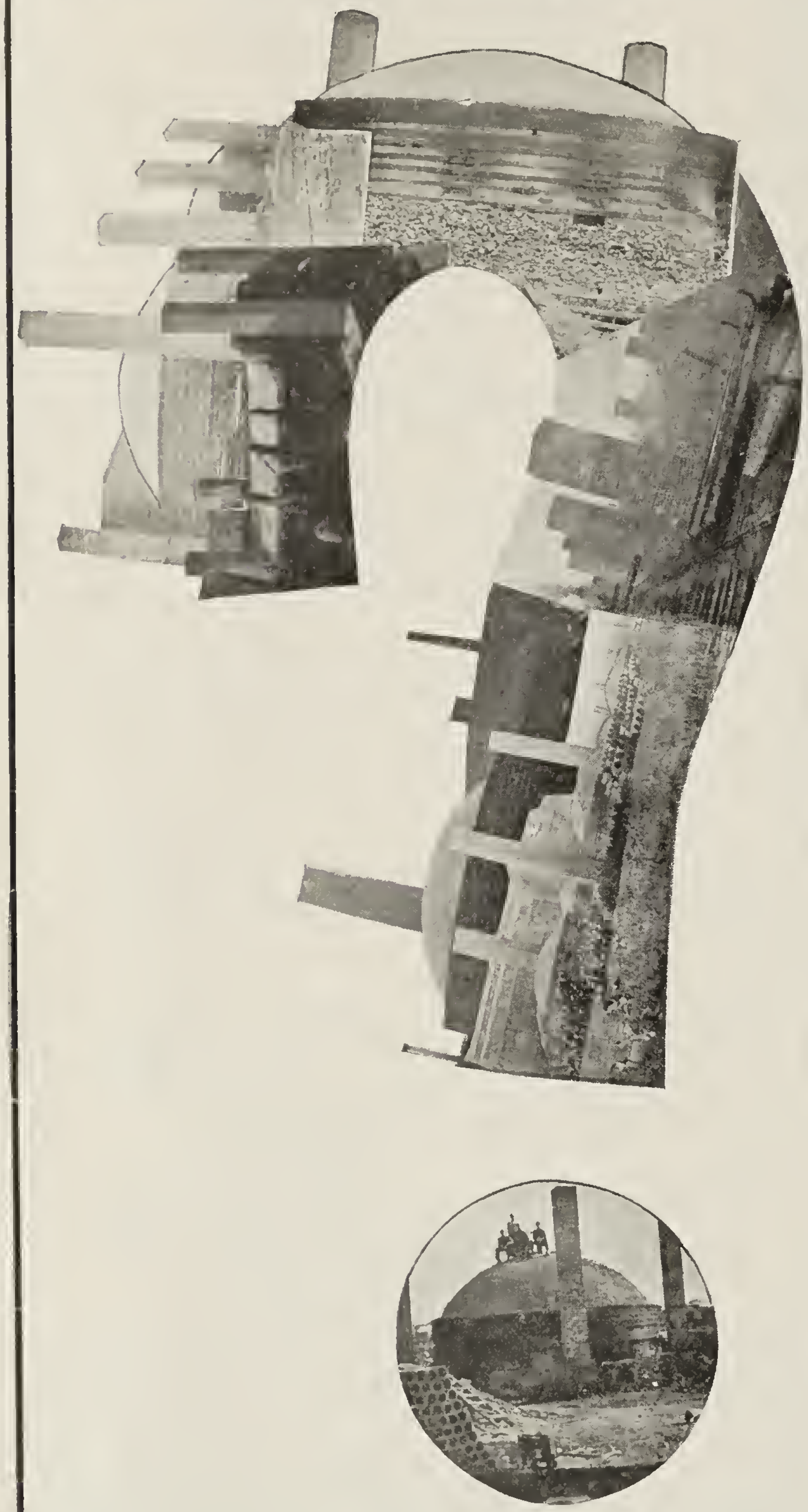
It is low in cost (about one-half as much as a small steam shovel), it operates very cheaply, it produces a perfect clay mixture, has a low upkeep cost record—and will do your present work with less men.

Many plants have found it profitable, extremely so, send us your conditions, maybe it will suit them.

The Buckeye Traction Ditcher Company

Findlay, Ohio

IF IT'S A QUESTION OF KILNS—
WE CAN ANSWER IT



Equally efficient in round, square or rectangular kilns, single or multiple stack type. New Hook Kilns cost less, as a rule, than kilns of other styles. Old kilns can be changed to our type at comparatively small expense.

Give us number and size of your kilns, kind of ware, burning time and fuel consumption. We will estimate cost of installation and saving that can be effected.

Grate Bars, Bands, Lugs, Ventilators, Castings

HOOK PATENT KILN CO.

High and Spring Streets
COLUMBUS, OHIO

BIG CROWD ATTENDS MEETING *of* NEW JERSEY CLAYWORKERS

(*Continued from page 29*)

ent status of clays due to the war, and the subsequent close of the European market. Mr. Brown said that up to the time of the war, American clays for certain purposes were considered as inferior, and that the substitution of domestic for imported clays since this time has been very interesting; pointing out, however, that there is still room for considerable improvement in regard to the uniformity of materials. While American potteries often considered English clays as a standard for native materials, it was evident that such were not satisfactory for the Germans, as exemplified in the case of the production of hard porcelain wares, and in making such observation, Mr. Brown said: "If the English clays were not good enough for the Germans, are they good enough for our purpose?"

The paper also set forth that Florida companies have made great headway in development work and utilization of the native product—far more so than has been made in Georgia or other states. American clay, said the paper, is satisfactory for the production of certain goods and not for others, and with but a few exceptions, manufacturers are seemingly looking for the return of the days when unlimited quantities of foreign clays can come into the market. Should conditions return to their status before the war, there would be a general tendency to drop back again to the use of foreign materials, and most of the experimenting work with domestic clay would be abandoned. Considerable advancement has been made in the utiliziation of American pottery clays, and this development work should continue, for there never was a more favorable time than the present, and with the return of normal trade conditions, American potteries will likely feel the effect of strong competition.

In the discussion that followed, it was brought out that the clay from North Carolina seems to come nearest to the English china clay. The production of the kilns in this district is somewhat variable in quantity, on account of the seemingly small deposits; Florida and Georgia kilns are deemed secondary to those of New Jersey.

M. A. Edgar, operating a clay plant at Metuchen, N. J., said: "For general utility Georgia clay answers all practical purposes. We are now completing a plant with capacity of 100 tons a day for the production of Georgia clay. In washing our clay, we run it thru probably five times more than is ordinarily considered necessary to eliminate the impurities before it goes into the presses. The consequence is that we take out everything possible. I believe that if potteries could and would obtain Georgia clay, it would be a great aid in eliminating many difficulties."

STUDY FOREIGN PHYSICAL CONSTRUCTION

L. E. Barringer, of the General Electric Company, Schenectady, N. Y., called attention to the fact that Colorado clays are very good and are now being utilized successfully for mechanical porcelain specialties, saying: "If the American clay producer is to duplicate German and English clays, it is not sufficient to have them white or to vitrify them. I have been surprised at the physical difference between American, English, and German clays. Careful analysis should be made of the physical construction, as it is a primary consideration."

Prof. J. B. Shaw, of the New York State School of Clay Working and Ceramics, Alfred, N. Y., said that there are no two clays alike, but that American ball clay properly washed will make as good a product as formerly obtained from Germany, continuing: "There is no reason why we should not be able to replace any foreign clay by carefully investigating the different clays and the proper ways to combine them. While there is no American clay that will replace the German product for the making of glass bottles, the use of two or three, or a combination of American clays, can duplicate the German clay satisfactorily. Moreover, no two clays contain the same physical properties, but two clays can be found which, when combined properly, duplicate practically any individual clay."

"Preparation of Glazes and Enamels," by Prof. J. B. Shaw, New York State School of Clay Working and Ceramics, Alfred, N. Y. This paper covered investigations of the composition of enamels and the preparation of raw materials, showing that the ultimate quality depends partially upon the quality of the goods used. It was pointed out that a few years ago the washing of ball clays was considered impractical, while now it is possible to wash them free of all foreign matter. As is well known, the question of moisture is an important factor to be taken into consideration, and this was carefully set forth in the paper. Prof. Shaw mentioned the difficulty ensuing thru the use of secret formulas, and the loss of time and efficiency thru this cause, as well as many evidences of bad practice thus brought about. The paper also embraced tempering the glaze or enamel and the use of proper agents, showing that adequate tempering is not easy to accomplish. The fritt furnace and fritting were dwelt upon, and the care and consideration that should be taken as regards the carbon in smelting enamel containing lead. In connection with the development of a material called Tripoli, Prof. Shaw said: "Some of this material has been used quite successfully in special glaze work, and it seems likely that it could be substituted for French flint. It is almost entirely amorphous and contains about 80 per cent silica. It burns to a pure white color. With the enormous deposits available, it seems that if American potters desire a substitute for French flint, this material will answer the purpose."

An interesting discussion of this paper followed, in which the different important points were fully covered with an exchange of practical views of different members present.

TERRA COTTA CRACKING DISCUSSED

"Notes on the Cracking of Terra Cotta Bodies," by E. C. Hill, New York Architectural Terra Cotta Co., Long Island City. This was an interesting and comprehensive paper covering important phases of fractures in terra cotta products and characteristics of the material under different types of loading. It also embraced the subject of the results of fire on terra cotta and different character of cracks, known as fire-cracks. Mr. Hill illustrated his paper with a curve representing the per cent. of flint and clay in the terra cotta body, with the object of studying their effect upon fracturing and cracking.

Many members entered into the ensuing discussion, which not only dealt with terra cotta in general, but also with the subject of low burning clays. In this the frequent difficulty prevalent thru the use of the Fahrenheit and Centrigrade system of heat measurement was brought out, with remarks that the mechanical lines and newer industries have adopted the latter system in nearly all cases, and that the clay industry likewise should adopt a recognized standard to facilitate work. This would not only assist the individual plant, but make for uniformity in the different phases of work.

SLABS AND SAGGERS

"Clays for Slabs and Saggers," by R. C. Purdy and M. F. Beecher, Research Laboratories, The Norton Co., Worcester,

"That belt must be slipping, George! It's too loose on the pulleys!"
"No it isn't, Uncle. If it slipped at all, it wouldn't stay on the pulleys a minute!"
CLING-SURFACE

THE new Superintendent was different.

For the first few days he just walked through the plant and looked at things. Down in the engine room he took the speed of the engine. Up in the shop he took the speed of the main shaft. Then he did some figuring. These are the figures:

Driving pulley 8 feet diameter.
Speed 80 Rev. per minute.
Driven pulley 4 feet diameter.
Speed should be 160 Rev. per minute.
Speed actually 155 Rev. per minute.
Loss 5 Rev. per minute.
5÷160=3% approximately.

8 feet x 3.1416 x 80 Rev. per minute=about 2000 feet per minute the belt travels.

3% of 2000 feet=60 feet per minute LOST.

Pulley centers at 20 feet, so belt length approximately 60 feet.

This meant that once every minute his belt was useless, *for the loss in feet per minute due to slipping was more than the length of the belt itself!*

In a ten-hour day this loss would be 36,000 feet, so that every day the engine had to give that belt a *free ride* of nearly 7 miles! And the firm paid the bills at the coal pile and machines, at the bearings, pulleys and in the belt itself. It didn't look right.

The plant had over one hundred belts. If they all slipped, the firm must be losing hundreds of dollars a year in power, time and equipment which might better be saved.

* * *

The new Superintendent never did things on impulse, or merely on someone else's say-so. Back in his experience he had *used* CLING-SURFACE, the treatment which PREVENTS SLIPPING, and allows the usual drive to be run easy or slack under full load. He knew that it makes constant tension unnecessary, preserves and makes the belts thoroughly pliable and waterproof; that it is not sticky, contains no rosin or anything harmful, and is safe, easy and economical to use.

So he had every belt treated, and the effect was seen at once. His slipping stopped, he had more and steadier power, and not a belt has been taken up since that time.

This is fact: we can prove it on your drives to YOUR satisfaction. Just ask for THE PLAN 10,000 firms have found successful.

And remember, use CLING-SURFACE and you won't need belt dressings.

Cling-Surface the life preserver for belts TRADE MARK

CLING-SURFACE CO.
1029 Niagara Street
Buffalo New York U S A

Copyright 1917 by Cling-Surface Co.

Clay Plant Man Power Has Been Superseded by Machines

The Ridgeway Brick Co.

The Belden Brick Co.

These plants are prepared, they will have a means of moving their burnt stock when the United States Army has been assembled, with many of their men in its ranks.

The Automatic Elevating Platform Truck

carries six times as many brick as a barrow, moves twice as fast and will save you from six to ten men.

The Automatic Transportation Co.
2933-2965 Main St., Buffalo, N. Y.

Pioneer manufacturers of Electric Storage Battery Trucks, and the only Truck manufacturers awarded Gold Medal at San Francisco Exposition.

Mass. In this paper the principal requirements of mixtures were brought out and the necessity for the clay to be of a nature to withstand rough handling, support the required load without fracture and without excessive warpage; this reverts to the raw clay mixture and essential factors to be considered. In this, the mixture must be plastic enough to flow well, and have sufficient strength to prevent cracks, with good dry strength when initially used. Four types of clays were mentioned, the explanation of the sandy, open-burning, plastic burning, and plastic open-burning, and difficulty in obtaining the latter, which contributes so greatly to the workability of the mass. Consideration to shrinkage was given, presenting figures at from 12 to 16 per cent. for shrinkage and 8 to 12 per cent. for viscosity for certain clays, and from 7 to 11 per cent. and 11 to 20 per cent., respectively, for other types of clays.

In the discussion following, it was brought out that New Jersey has excellent deposits of plastic types of burning clay, and that certain clay pits in the state are capable of producing clay for the best character of fire-brick. Other points considered were refractory clay mixtures, mechanical strength, quantity consideration, and the shrinkage of clay under different conditions.

EVENING SESSION WELL ATTENDED

The evening session opened at 7:45 with a still greater attendance than in the afternoon, many of those engaged at the local pottery works being present to hear the important papers presented. These papers were:

"The Mechanics of Ceramic Engineering; Dryers and Kilns," by L. E. Barringer, General Electric Co., Schenectady, N. Y. In opening, Mr. Barringer said: "Every man in New Jersey who is interested in ceramics should be a member of the American Ceramic Society" and this was heartily approved by those present, as indicated by the applause. The paper covered its subject in a comprehensive and instructive manner, dealing primarily with pressing, drying, and burning, and indicating the notable advances which have been made in apparatus for this purpose in the past two years. It was shown that efficiency and success depend upon proper drying and burning, and that in the main this is purely a mechanical problem, and one deserving of careful study. Ceramic products dry at different heats, and heat cannot be applied directly; moreover, humidity is an important factor in the drying, as is also that of temperature and temperature control. Drying naturally cannot take place in a saturated space; to dry clay ware a close space is necessary.

Mr. Barringer spoke of the humidity dryers for porcelain now in service at the plant of the General Electric Company, Schenectady, N. Y., and the efficiency being obtained. These dryers are of a continuous type, automatically regulated, and by their use thoro drying is accomplished in from four to five days, where six to eight weeks were required formerly. The dryers consist of several compartments with provision for fixed conditions of humidity and temperature, and convenient arrangement for handling the ware to be dried in removal from one compartment to another. Other equipment is now being employed at the works which is expected to accomplish the drying of products within forty-eight hours—the same wares heretofore requiring from six to eight weeks as noted. Mr. Barringer also spoke of continuous dryers and their interesting development to the standard of today, allowing a fuel saving of from forty to fifty per cent. A continuous dryer has been installed at Schenectady which has paid for itself within three years in the saving of fuel. A continuous dryer, as will readily be appreciated, is not practical for small production, and the volume of ware to be dried must be such as to keep the dryer continuously operating to make it practical and economical.

The discussion which followed brought out that the continuous kiln at Schenectady is 196 feet long, and further, that the average kiln of this nature costs from $25,000 to $50,000 to install. Mr. Barringer holds that it is practically 100 per cent. efficient.

BLEININGER POINTS OUT ENCOURAGING DEVELOPMENTS

"Some Recent Problems in Ceramics," by A. V. Bleininger, Bureau of Standards, Pittsburgh, Pa. Mr. Bleininger's paper dealt primarily with the cutting off of the supply of European raw materials, as well as finished products, referring particularly to chemical stoneware, chemical poreclain, clay as used for the making of glass pots, and other glass house refractory clays employed for the preparation of enamel specialites. It was explained that exceptional developments had resulted in the replacing of many of the European materials with domestic products, and that this had not in all cases been a very easy task, requiring technical and scientific investigations and research for the most effective solutions.

It was pointed out that clayworkers are now in a position to produce glass house refractories of excellent qualities and have learned to produce special ceramic bodies by the process of synthetic composition of American materials. Reference was also made to graphite crucibles, and this problem, it was pointed out, has not as yet been completely solved. The product which is causing the greatest trouble is the optical glass, which is needed for war service, glassware for panoramic camera lenses, etc. While the processes have not been perfected, rapid development has been made, and there is every reason to believe that in the very near future glassware of this nature will be produced to answer all necessary requirements. The industries are making strenuous efforts to produce this glass, but it must necessarily go thru a state of apprenticeship.

Owing to the lateness of the hour and the fact that Mr. Bleininger was forced to leave the meeting to make a train connection, it was decided to forego a discussion of this subject at the time.

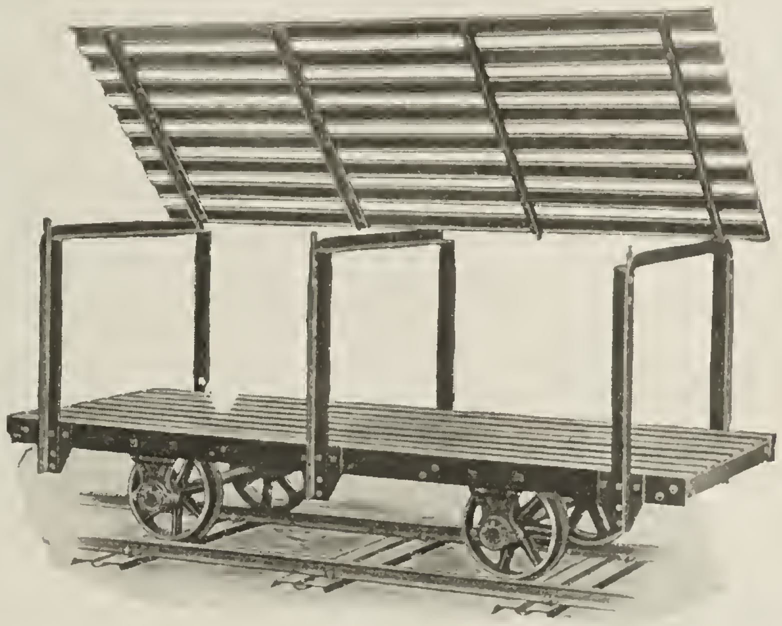
"Chemical Stoneware," by Fred A. Whitaker, General Ceramics Co., Keasby, N. J. This paper was devoted to the production of chemical stoneware, with many interesting specimens of various shapes and sizes, as round, flat, oblong, etc., being shown. Mr. Whitaker entered into a brief discussion of the materials and methods of handling to produce the best results.

In passing, it is interesting to note that the New Jersey Clay Workers' Association has a rapidly growing membership, now totaling about two hundred. It is anticipated that the forthcoming winter meeting at Rutgers College will be of a particularly interesting and instructive nature, with papers arranged along practical lines to help the clayworker and those engaged in the ceramic industry to all possible advantage.

* * *

Car Shortage Situation Improving

"There is already a marked improvement in the car shortage situation," writes J. W. Lee, Jr., of the American Railway Association. Going further and giving some exact figures, Mr. Lee states that in the month of May the shortage was reduced from 148,000 to 105,000 cars. There is also much improvement in the loading of cars to their full capacity. This, of course, has had and will have a marked effect on increasing the supply of available equipment.



LAKEWOOD—
————CARS

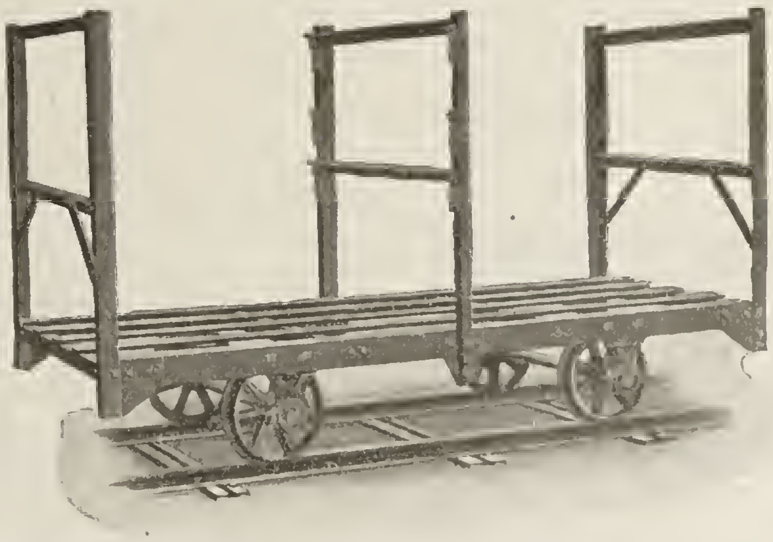
There is no substitute for Lakewood

You don't need to HAVE, and you don't need to BUY frail, flimsy, light cars.

Specify exactly what you want—to Lakewood—or—
"Leave-it-to-Lakewood"

and in either case the result will be a tough, upstanding, long-service car that will meet your requirements.

The
Lakewood Engineering Co.
CLEVELAND, OHIO



Kissel ALL-YEAR Cab with New Kissel Trucks

ALL-YEAR Cab showing winter attachments.

Pat. applied for

ALL-YEAR Cab without winter attachments is standard equipment.

All-Year Comfort for Drivers
Increased Results for Owners

Here is Kissel's contribution to the motor truck field—the New **ALL-YEAR Cab**—a feature that will be eagerly welcomed by motor truck drivers and owners in the *brick and clay business,* because it:

Protects drivers in wet, stormy or cold weather—

Removes the necessity of layups on account of rain or snow storms—

Discourages speeding—diminishes possibilities of accidents and excessive wear and tear—

Keeps trucks in operation the year around, regardless of weather—

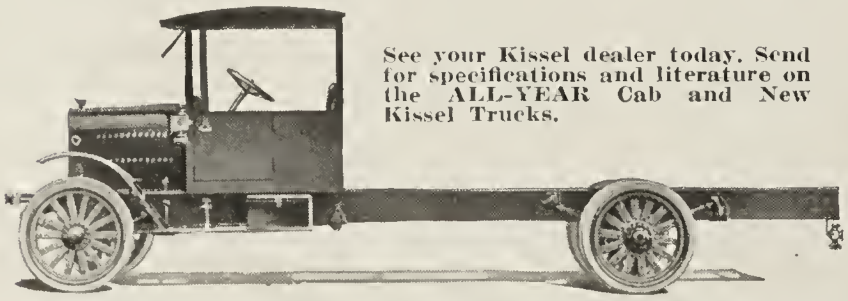
In its summer form it provides drivers with a cool, open housing. In winter the ALL-YEAR Cab is quickly changed into a warm, dry closed cab—weatherproof, draught and leak proof—by adding the winter attachments—$50 extra.

Announcing the Five New Models of

KISSEL TRUCKS

A Truck for Every Purpose

Never before has there been offered to *brick and clay owners* so much truck quality at the price. Chassis prices, $1085 to $3750.



See your Kissel dealer today. Send for specifications and literature on the ALL-YEAR Cab and New Kissel Trucks.

Kissel Motor Car Company

Hartford, Wis., U. S. A.

Agencies in All Principal Cities and Towns

RATE FUNDAMENTALS *and* TARIFF INTERPRETATIONS

(*Continued from page* 41.)

overhead costs. Freight rates directly or indirectly enter into the cost of every article he buys and every article he sells. The subject, therefore, merits attention.

THE SOURCE OF FEDERAL TRANSPORTATION REGULATION

Section 8 of Article I of the Constitution of the United States empowers Congress "to regulate commerce with foreign nations and among the several states and with the Indian tribes." Transportation service, altho rendered by private corporations, is quasi-public in its character. Acting under the clause quoted, the federal government has seen fit to take over the regulation of this service in the interests of the public. This has been accomplished thru the medium of the statute known as an Act to Regulate Commerce, first enacted in 1887. In that law and its subsequent amendments*, broad principles as to rates and service have been laid down. The administration of these principles and their application to the every day service of business has been intrusted to the body known as the Interstate Commerce Commission. Under the law and its interpretation, the statement of charges as made in the schedules of the carriers has been given a legal sanctity.

Finally, if self-interest is not keen enough to urge the business man of modest proportions to a study of the transportation question, self-preservation should. Because interstate transportation rates, when published in accordance with the requirements of law and the commission, have the same force as a statute actually passed by Congress, non-observance invokes penalties against both carrier and shipper. During the year ending October 31, 1915, fines aggregating $36,675 were imposed against shippers in twenty-three proceedings for violation of the interstate commerce laws. One shipper was sentenced to six months' imprisonment for presenting a false claim; another paid $2,800 for attempting to misbill. The law presumes that the shipper knows his rights and obligations and ignorance will not permit him to escape his responsibilities. Therefore, the wise business man will guard against even unwittingly violating the letter of the law because, regardless of the final outcome of an indictment, the process of defense is expensive and burdensome.

The first step in an understanding of the practical problems with which every receiver and shipper of interstate freight† has to deal is knowledge of the fundamental rules of tariff publication and interpretation. To give an introduction to this knowledge, not from historical or academic viewpoints, but from the standpoint of current application in modern business is the purpose of the articles to follow.

⁂

The increased cost of materials is holding back building operations in Duluth, Minn., somewhat but real estate is fairly active, showing good promises for the future.

---

*The law has been amended several times, viz., in 1889, 1891, 1895, 1906, 1909, 1910, 1912, 1913, 1915 and 1916. The amendments of 1906 and 1910 are particularly important in their bearing upon general rate regulation and tariff publication; those of 1915 and 1916 upon the limitation of liability. Certain other collateral statutes have been passed affecting interstate regulation.

†Because the bulk of the business of the country is interstate in character, the discussion in this and subsequent articles in this series is confined to interstate transportation rules and practices. Unless otherwise qualified, wherever "Commission" is used, it refers to the "Interstate Commerce Commission."

(1005)

POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

The Anchor Pottery, of Trenton, N. J., has installed a new drying room which contains some striking new features. Robert Rowland, a veteran jiggerman, advanced the idea to the management of the company, and it was speedily carried out. A number of the largest pottery manufacturers in that section and in Ohio have visited the plant and expressed their approbation of the methods employed. The old drying room subjected the jiggermen to an unhealthy working condition, because of the numerous trips required into the superheated compartment where the ware is dried after it comes from the jiggermen's benches.

The new dryer room, however, does away with that. The shelves are so arranged and located that the men never have to go more than fifteen feet from the bench, and in some instances not more than seven feet, and they are not subjected to extreme heat. The board of health has approved the new plan, and experienced men have declared it an innovation which will be welcomed by all potters.

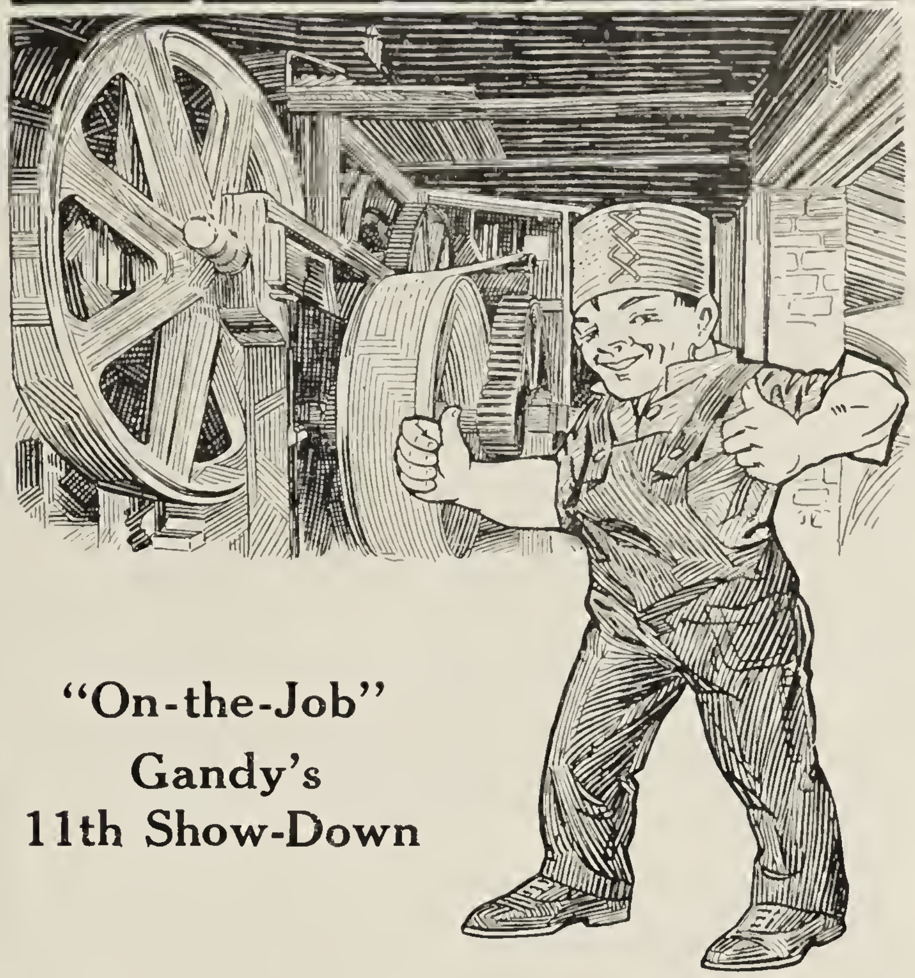
According to a report made by various parties every potter in Trenton, N. J., is busy. Large government orders have contributed to this prosperity, but without them no difficulty would have been experienced. Business has improved ever since the war in Europe cut down imports. Much more pottery is coming from Japan than heretofore, but it hasn't reached the proportion of the former imports from Europe, tho receipts are growing very fast. The conditions are so favorable that potters are planning developments and looking forward to much better business thru the coming year. They hope, too, that now buyers have discovered that good pottery is made in America they will no longer import as much as they have in the past.

Proprietors and employes of the Trenton (N. J.) Potteries Co. have pledged $6,760 to the Trenton War Emergency fund. This represents a total of $65 a week from the workers of six plants and the office force. The company itself will duplicate the amount. John A. Campbell, president of the Trenton Potteries Co., is treasurer of the fund.

The production of jugs and open ware is keeping the plant of the Louisville (Ky.) Pottery Co. exceedingly busy at this time. This company has encountered great difficulties in holding the labor supply up to adequate dimensions, and has advanced its prices on its products as a result of the increases in the costs of supplies.

Because of the increased demand for electric porcelain materials and shapes—both general and special shapes—all western plants are working to capacity, and are some months behind on deliveries. One new electric porcelain plant is about to be placed in operation at LeRoy, N. Y., which will have a capacity of four kilns.

The Nashville (Tenn.) Pottery Co. recently made a twenty-five carload shipment of pottery products to the Southeast. W. H. Quarrels, secretary and manager of the company, reports trade active.



"On-the-Job" Gandy's 11th Show-Down

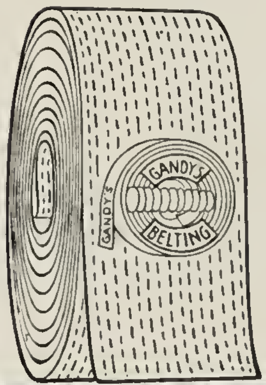
From a Large Pug Mill in New Jersey comes this report about me—the original stitched cotton duck belt.

" 'We have not yet succeeeded in wearing out any of our GANDY BELTS. In fact, they show almost no signs of wear, in spite of hard service which brick manufacture puts upon them.'

"I tell you this, not because I'm puffed up with pride at the fine service I'm giving everywhere, but to prove to you that every day, every week, every month you keep me out of YOUR plant you are depriving yourself of a brawny, built-for-the-job profit builder.

"Send for me through your supply house or my home direct. Look me over when I come. My painted green edge and the well-known GANDY trademark will tell you at a glance that I'm the **genuine** 'On-the-Job' GANDY stitched cotton duck belt—the belt with a 37-year reputation for getting **all the pull from the pulley.**"

Write for samples and prices



The Gandy Belting Company
732 West Pratt St.
Baltimore, Md., U. S. A.
New York Branch: 36 Warren Street

SAY I SAW IT IN BRICK AND CLAY RECORD

SAND LIME BRICK

For certain kinds of work there is none better, its use is increasing rapidly each year. It commands a high price relative to its manufacturing cost.

It should be made GOOD. It can be and is made GOOD on "Jackson & Church" Machinery.

The entire equipment necessary is very simple, and not expensive.

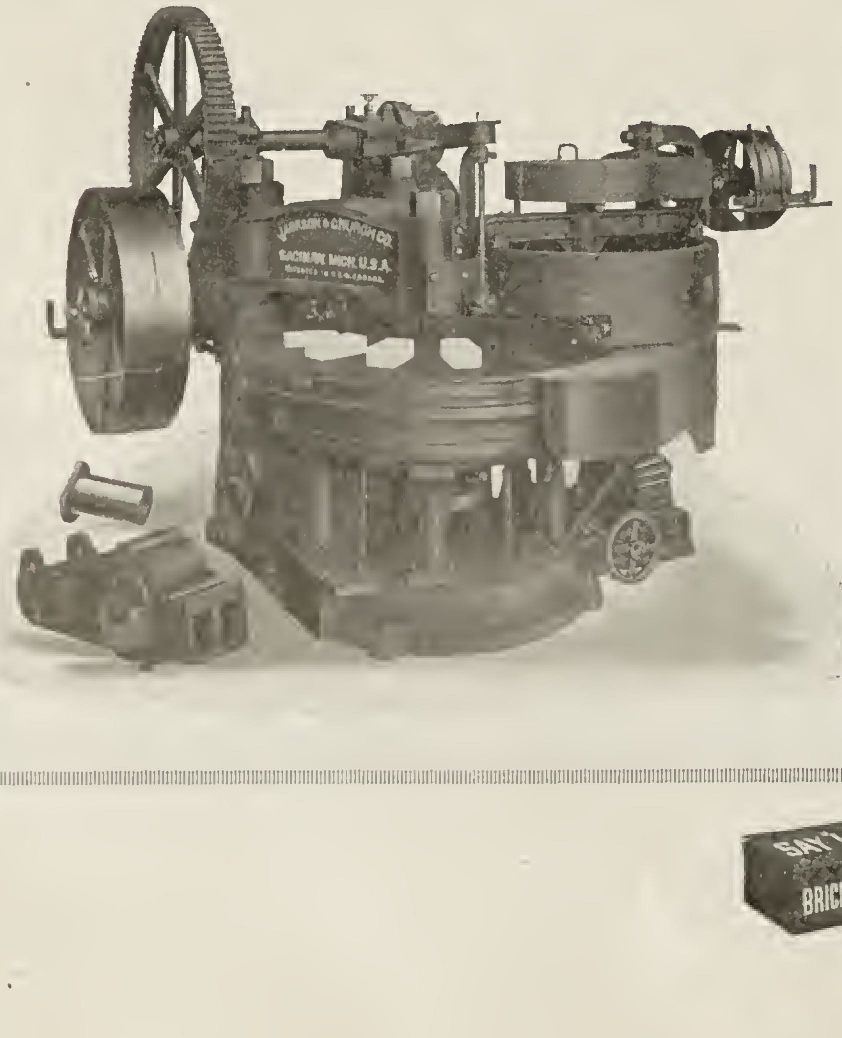
The materials used are 95% sand and 5% hydrated lime.

Look into this now, for it surely is a near future method to produce good brick at a low cost.

Jackson & Church Co.

Saginaw, Mich.

Builders of a complete line of Sand Lime Brick Machinery, Boilers, Rotary Dryers, Kilns, etc.



MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

"The Story of Clay"

The above is the title of a booklet that is being distributed by the Manufacturers Equipment Company of Dayton, Ohio.

An idea of the scope of the work can best be obtained by listing a few of the chapter subjects, which include a very comprehensive digest of each topic suggested.

"The Story of Clay," "Clay Products," "Development of the Industry," "Effect of Heat on Clay," "The Man and the Process"; and finally some exceedingly valuable chapters on the Underwood system, cost data, applications, etc., making altogether a booklet that you will appreciate and which may be obtained by request.

* * *

Silent Chains on Duplex

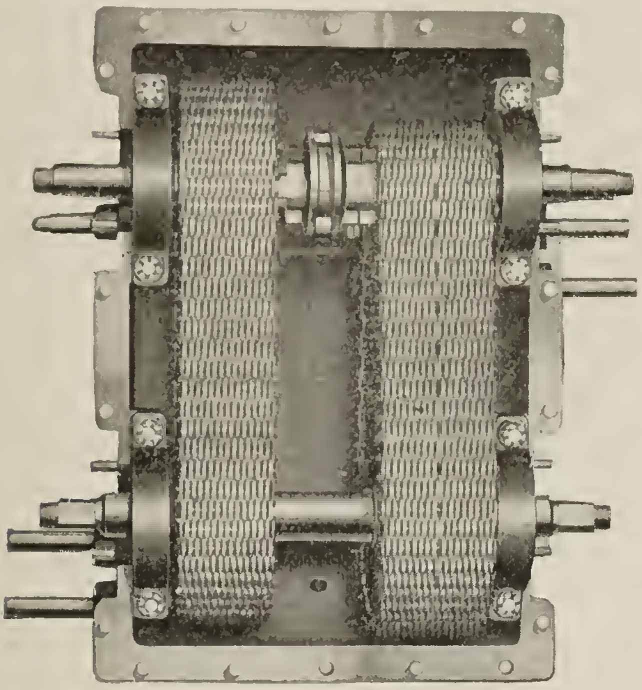
Everyone knows that the Duplex Truck is driven by power applied to all four wheels, in fact it is the *original* of this type.

The logic of this method is very forcible as it is plainly evident that one wheel, one set of wheels or even three wheels may become mired while the remaining wheel, or wheels, is on sound "footing" and capable of pulling hard and—out.

"An extra pair of horses" is a phrase often used by Duplex drivers when referring to this dual power.

The method of applying the power to both axles, front

The Catalog Tells In Detail the Special Advantages of the Duplex Truck



Duplex Chain Case

and rear, is very ingenious and, altho it cannot be shown in detail here for lack of space, it is extremely simple.

The accompanying illustration of the Duplex chain case shows the thoroness with which the entire truck is manufactured, as two very high class silent chains are used to transmit the power to the two drive shafts, which in turn transmit the power to the axles thru the front and rear differentials.

A beautiful and very complete catalog may be had by addressing The Duplex Truck Company of Lansing, Michigan.

⁂

George C. F. Vater Goes with International

"International Service" is certainly fortunate in adding to its organization Geo. C. F. Vater, of Cleveland, Ohio.

Mr. Vater will take the title of Associate Chief Engineer, and will be in charge of the work International is

GEORGE C. F. VATER
Associate Chief Engineer, International Clay Machinery Company, Dayton, Ohio

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.

400 Chestnut Street
Philadelphia, Pa.

The Price of Coal

subject to such uncertain conditions as exist at the present time, demands that you keep a watchful eye and an open ear upon this big factor of your operating expense.

The price of coal will not be any lower than it now is, and will undoubtedly go much higher within the next few months, because of the material increase in miner's wages and mining supplies.

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

strenuously doing in the promotion of Producer Gas Fired Continuous Kilns and Producer Gas Fired Dryers.

Mr. Vater is at present one of the best known continuous kiln experts in the country, being a graduate of a foreign university in ceramics, having spent five years with one of the largest fire-brick concerns of this country, six years with the Gas Machinery Company of Cleveland, and two years with the Gas Bench Construction Company of St. Louis.

He was the father of the design of one of the largest continuous kilns on the continent; has written many works on Producer Gas Fired Continuous Kilns, and has read a considerable number of papers before the National Brick Manufacturers' Association and various state associations on this type of kiln.

Under Mr. Vater's technical supervision, International presents to the trade its Producer Gas Fired Continuous Tunnel Kiln for the burning of building brick and hollow-ware, and its Double Bag Wall Compartment Kiln for the burning of high-class clay products.

Mr. Vater being the author of several patents on the Producer Gas Fired Dryer, as well as the Kiln, he is also in excellent position to supervise the dryer end of International's business.

International considers itself most fortunate in obtaining the services of such a high-class man to supervise its kiln and dryer work.

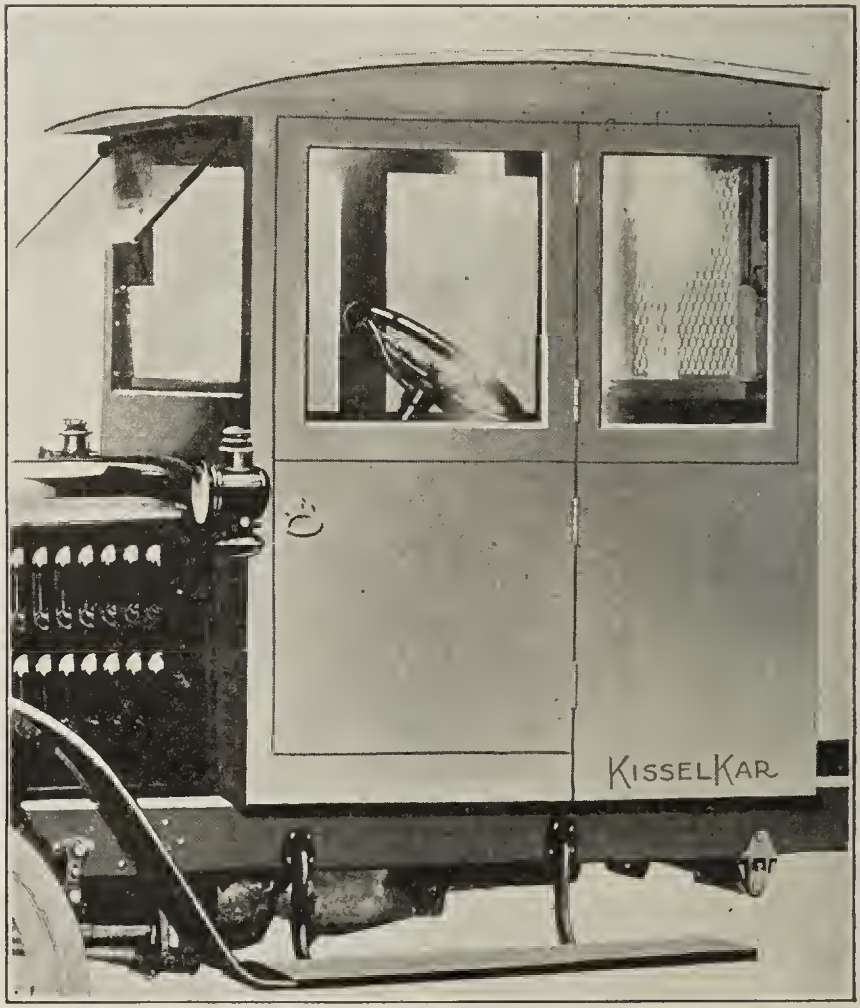
⁂

New ALL-YEAR Cab

An innovation that is destined to have a marked effect on the efficiency and comfort of motor-truck drivers, and one that will give increased results to truck owners, is that of the ALL-YEAR Cab, originated, designed and built by the Kissel Motor Car Company, Hartford, Wis.

It is a new adaptation of Kissel's original convertible idea, giving to truck drivers a closed, warm cab in winter, and which can be easily and quickly changed into the Kissel standard open cab in summer.

Standing a little over five feet from chassis frame to



THE KISSEL ALL-YEAR CAB IN WINTER

Showing the Winter Enclosures, Consisting of Rain-Vision Windshield, Side, Door and Rear Windows That Are Easily and Quickly Attached to the Standard Open Cab (See Other Illustration) Making It Rain, Snow, Damp and Cold Proof

roof, the cab frame is of extra hard wood, bolted and locked. All sides and doors are covered with specially treated sheet metal enabling the cab to withstand the twists of the frame when negotiating rough roads. Instead of the common wooden dash that loosens quickly, the ALL-YEAR Cab dash is of heavy plated metal giving unusual substantiality.

The seating capacity is for three men with plenty of leg room. Tank and tool compartments are under the seat. Doors on each side measure 25 inches wide—an unusual width for truck cabs. Metal pockets are furnished on both sides of cab for time, tire, gasoline and other mileage record cards and books.

Another feature is that of the instrument board set at right angles, with plenty of space for all necessary electrical instruments, speedometer, gauges, etc. Special Pittsburg glass is furnished for the doors, sides, and rear window which has a heavy wire protection screen. A rain-vision windshield is also included with the winter equipment.

The ALL-YEAR Cab is windproof, rainproof, coldproof, in fact all-weather proof, not only giving the driver in winter a warm, dry, comfortable housing under all climatic conditions, but a cab that is solid and substantial, roomy, sightly and attractive.

To change the ALL-YEAR Cab into the Kissel standard open summer cab, the winter inclosures, consisting of windshield, side, door and rear windows, are easily and quickly removed.

The ALL-YEAR Cab which the Kissel Motor Car Company has been experimenting with all winter, covers other original and exclusive features that insure all parts fitting closely, securely and permanently in the most severe weather.

No longer will truck drivers and helpers have to work unprotected in winter weather. No longer will truck owners jeopardize their property in the hands of frozen drivers. Undoubtedly Kissel's ALL-YEAR Cab fills a long felt want.

The ALL-YEAR Cab, which is exclusive with the new Kissel trucks, is in its open form, without the winter in-

THE KISSEL ALL-YEAR CAB IN SUMMER

In This Open Form It Is Standard Equipment on All the New Kissel Truck Models Excepting "The Flyer" Light Delivery Car

THEW SHOVELS

in use on over 300 plants give to us over 300 references of which we are justly proud

Upon the records made in these plants, the Thew stands as a remarkable,—even a wonderful machine, for in all cases it is giving satisfaction.

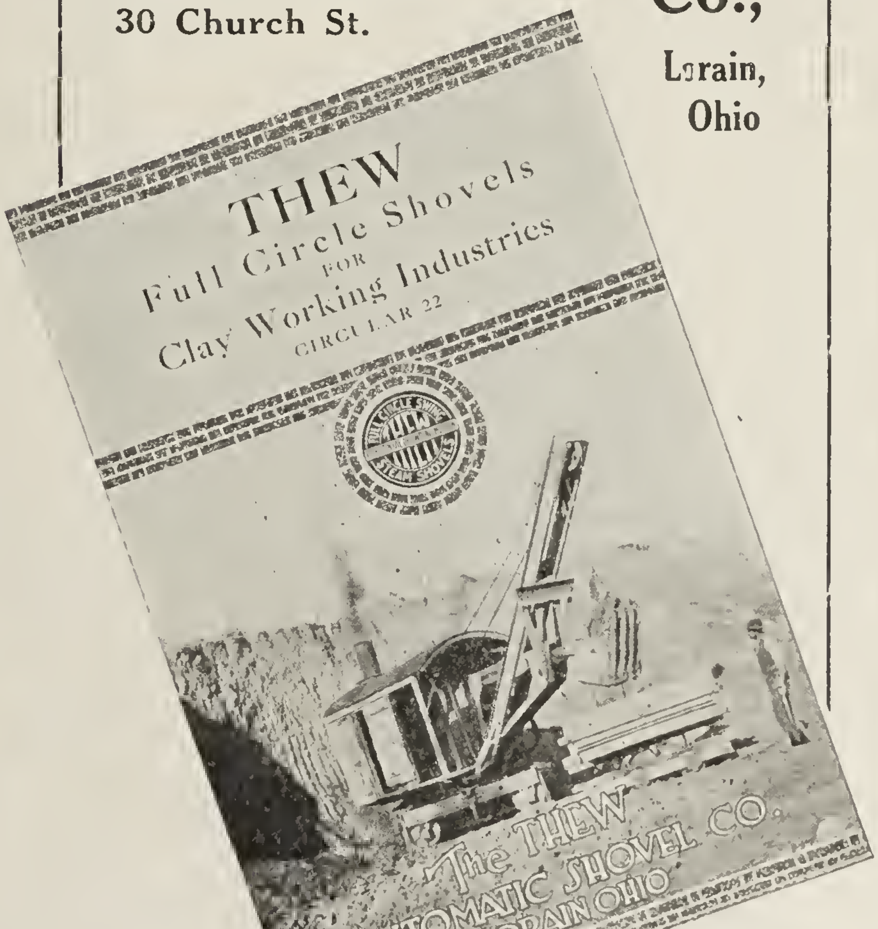
The Thew produces the material, and it does so at a greatly decreased yearly cost, which are the primary reasons for a purchase.

A special catalog giving to you authentic information regarding operating costs in clay plants should be in your hands for leisurely study. It shows in unmistakable terms the folly of doing without a THEW STEAM, GASOLINE OR ELECTRIC SHOVEL.

Send in your request today for Circular 27-C.

The Thew Automatic Shovel Co.,
Lorain, Ohio

New York Office:
30 Church St.



THEW
Full Circle Shovels
FOR
Clay Working Industries
CIRCULAR 22

The THEW
AUTOMATIC SHOVEL CO.
LORAIN, OHIO

SAY "I SAW IT IN"
BRICK AND CLAY RECORD

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.20
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.25
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scumming and Efflorescence	.50
Seger's Collected Works	3.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, Book Department,

Brick and Clay Record
445 Plymouth Court, Chicago, Ill.

closures, standard equipment on all the new Kissel truck models excepting "The Flyer" Light Delivery Car. The winter inclosures for the ALL-YEAR Cab cost $50.00 extra.

* * *

Financial Service to Clay-Products Manufacturers

Do you want to expand your plant, to make it bigger in scope and capacity, to increase your output and earnings? Many concerns have ambitious plans which if carried out would enable them to meet the changing conditions of a big, broad market in a big successful way. Lack of money, however, holds them in check.

Heretofore clay-products manufacturers have often found it difficult to finance their propositions because bankers have been slow to realize the extent of the industry, which produces almost $200,000,000 of ware each year.

Many legitimate and sound enterprises have trundled along half-heartedly when an injection of cash assistance would have enabled them to develop and extend their plants, making operations on a larger and more profitable scale possible.

For years, F. W. Morgan & Company, First National Bank Building, Chicago, have specialized in the financing of reliable clay companies and some of our most famous plants are listed among their customers; for example, The Clay Products Company of Brazil, Indiana; Abingdon Clay Company, Abingdon, Illinois; Postville Clay Products Company, Postville, Iowa; Whitewater Brick & Tile Company, Whitewater, Wisconsin; Western Shale Products Company, Ft. Scott, Kansas; Dennison Clay Company, Dennison, Ohio, and others of importance.

F. W. Morgan & Company will gladly assist in developing your plants from a financial standpoint, and welcome an opportunity to have their clay experts examine your properties.

* * *

Erie Shovel Bulletin

The Ball Engine Company of Erie, Pa., have recently issued a most instructive catalog No. S-16. In minute detail it illustrates and describes every part and action of Erie shovels.

It shows the features that are exclusive with the Erie, and their advantages. It shows how the shovel is operated mechanically; and it shows also the shovel operating in all kinds of cuts.

For the man interested in power shovels this Bulletin S-16 is a clear, concise exposition that cannot fail to instruct.

* * *

New Men With Zelnicker

Walter A. Zelnicker Supply Company, in Saint Louis, announce the recent appointment of Karl W. Bock, as manager.

Mr. Bock was, for the last ten years, secretary of and assistant to the vice president of the Union Pacific Coal Company and subsidiary coal companies located at Omaha, Nebraska.

The Zelnicker Company have also secured the services of W. H. Dayton, as city salesman.

Mr. Dayton was formerly with the Railroad Supply Company, Chicago, as secretary and purchasing agent; also their eastern representative for five years. He came to Saint Louis seven years ago representing the same firm and that of the Chicago Signal & Supply Company, and the Elyria Iron & Steel Company.

* * *

Practical Vulcanizing Hints

Many tire repairmen still throw away a portion of the old tread in making repairs. This waste may be saved by cutting the tread at one end and skimming back far enough to allow the fabric plies to be taken out. After this fabric has been replaced the tread may be laid back, saving material and making a neater repair.

A leaky air bag may be repaired by injecting cement, so that it forms a coating over the inside surface. This should dry for 24 hours. Then apply a second coat and allow to dry for 48 hours. When thoroughly dry cure the bag in an old scrap tire for 60 minutes.—Goodyear Tire & Rubber Company.

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at
the Post Office, at Chicago, Ill., Under
the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other
Tuesday by

Kenfield-Leach Company
445 Plymouth Court Chicago

Chicago, July 17, 1917

Vol. LI No. 2

Table of Contents

Overcoming Cracking in Drying Clay Products....123
Rate Fundamentals and Tariff Interpretations....131
Recent Developments in Foundations and Fillers for Brick Pavements....132
Sales Manager Sprouts a New Idea and Starts Something....118
Save Steel with Mill Construction..114
Suggested Improvements in the Manufacture of Silica Brick......127

The Editor's Corner....113

Machinery and Equipment....157
Pottery Notes....154
Straws That Show the Wind....151
The Superintendent....135
Wake of the News....138

American Clay Mchy..161-163
American Pulverizer Co....173
Armstrong Mfg. Co....141
Automatic Transportation Co....158

Baird M. & Mfg. Co....143
Ball Engine Co....155
Barber-Greene Co....110
Barrett Company....165
Beighlee Electric Co....147
Bell Locomotive Works....146
Black Diamond....156
Bonnot Co.... 96
Boss Co., J. C....139
Brewer & Co., H....177
Bristol Co....144
Broderick & Bascom....137
Brown Instrument Co....171

Canton Grate Co....148
Celite Products Co....139
Chambers Bros. Co.... 99
Chase Fdry. & Mfg. Co....170
Clapp, Norstrom & Riley..182
Clarage Fan Co....136
Classified Ads....180, 182
Cleveland Alloys Co....166
Cork Insert Co....159
Crescent Belt Fastener....137
Crimora Manganese....139
Cyclone Grate Bar Co....145

Didier-March Co....172
Drymore System....140

Englehard, Chas....174
Exner, J. E....Front Cover

Fate Co., The J. D....183
Forester, H....149
Freese & Co., E. M....179

Gandy Belting Co....153
Garnet Co....166
General Electric Co....109
General Store....166
Goodyear Tire & Rubber..103

Hardinge Bros., Inc....137
Harris Bros. Co....181
Hercules Powder Co....106
Hettrick Mfg. Co....140
Hill Clutch Co....137
Homestead Valve Mfg....166
Hook Patent Kiln Co....150

Illinois Boiler Cleaning Compound Co....166
International Clay Mchy..101

Jackson & Church Co....154
Jenkins Bros....147

K-B Pulverizer Co....138

Lakewood Engr. Co....151

Lincoln Electric Co....107
Link-Belt Company....108

Main Belting Co.... 97
Manufacturers Equipment 98
Marion Machine Fdry. & Supply Co....138
Marion Steam Shovel....143
Morgan Co., F. W....136
Morse Chain Co....175

New England Fire Cement Co....144

Ohio Galv. & Mfg. Co....171
Orenstein-Arthur Koppel..105
Osgood Company....171
Owens Continuous Tunnel Kiln Co....170

Philadelphia Textile Machinery Co....100
Potts & Co., C. & A....102
Price Electric Co....138

Randall Graphite Sheet Lubricator Co....136
Roessler & Hasslacher....146
Rollin Chemical Co....148

Sanderson-Cyclone Drill....138
Sauerman Bros....136
Sawyer Belting Co....173
Scandinavia Belting Co....136
Schofield-Burkett....172
Smith Co., Claude.... 95
Standard Dry Kiln Co....142
Steele & Sons, J. C....176
Stock Xylite Grease & Oil Co....136
Stupakoff Laboratories....139
Sturtevant Mill Co....184

Taylor Instrument Companies....141
Thew Auto-Shovel Co....152
Thwing Instrument Co....145
Trade Names....167
Trautwein Dryer & Engineering Co.... 95

Union Chain & Mfg. Co....136

Veritas Firing System Co..149
Victor Balata & Textile Belting Co....170

Wallace Mfg. Co....178
Watt Mining Car Wheel..142
Webner, Frank E....166
Weller Mfg. Co.... 94
Westinghouse Electric & Mfg. Co....104
Williams & Co., C. K....136
Wood & Co., R. D....157

Youngstown Steel Car....149

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

In Next Issue

¶ As this number of BRICK AND CLAY RECORD is being mailed, the American Ceramic Society is holding its summer meeting in New York State. Next issue (July 31) will contain a complete account of the ceramists' adventures in the plants of the Empire State which they are planning to visit. If you attend this meeting you will find the July 31 issue a pleasant remembrance of what you have seen; if you do not attend, that issue will be the friend who will come back and tell you all about it.

¶ "Barnes Stays on the Job" will be the title of G. W. Greenwood's article in the July 31 issue. The eager readers of this remarkable series of business articles in story form will find this narrative about Barnes as fascinating as those which have gone before.

¶ A. E. Williams will contribute an article on "Proper Draft Conditions in Kilns." The fact that Mr. Williams signs this paper, we believe, will be a sufficient recommendation for a careful reading of it.

¶ The two papers which received honorable mention in the recent Sales Ethics Contest will have a place in the July 31 issue. These papers were contributed by A. V. Smith, of the Streator (Ill.) Brick Company and Bernard W. Figgins, of the Baltimore (Md.) office of the Hydraulic-Press Brick Company (now Ensign Figgins, "Somewhere in the Atlantic"), and will have for their subject, "Knocking," particularly as it applies to the marketing of face brick.

¶ There will also be a staff article dealing with the chemistry of refractories in the July 17 issue. Watch for it!

BRICK AND CLAY RECORD should be as indispensable to you as market reports are to the stock broker. From it you can get the national situation in the clayworking industry at a glance. It hires the best technical authorities, as well as those on selling, management, and practical plant problems, taking in all of the subjects that could possibly be of interest to our readers. If you are not reading BRICK AND CLAY RECORD regularly and thoroly you are missing something. Better form the habit NOW, with this issue and continue it with the next.

The EDITOR'S CORNER

Shoulders Back; Chin Up!

IT IS SO EASY to be a pessimist. It doesn't take much brains or ability to find fault with conditions, people or things. Most men form their opinion of a situation from existing circumstances. If customers are not shooting in orders like shots out of a machine gun, business is irretrievably bad, and that is all there is to it.

There is one great danger in fixing our eyes too intently upon the things that are before us. Of course, we may get near-sighted, but the imminent catastrophe is that we may neglect proper preparedness for the future. If we become too deeply engrossed in the big business we may be doing now, we are apt to forget that there is a future to prepare for when orders will be less plentiful; on the other hand if business is "rotten" and it seems as tho the whole creation has gone to the bow-wows, there is a tendency to overlook the days when we will be getting more business than we want, and will not be prepared to take care of it efficiently or profitably.

So it is with the present situation in the clay products industry. If you are not running on back orders and the temporary let-up in building activity has left you looking for business, then you are apt to feel that a period of depression has fallen upon the nation, you begin to cast about for a buyer that will take your automobile, you sharpen your pencil preparatory to a wholesale cutting down of expenses and make up your mind that there is nothing ahead but trouble.

Cheer up, Mr. Lugubrious Blue. This old world has turned around a great many times since its formation, and will spin around a few more times yet. The things we see today are only temporal; conditions are bound to be different tomorrow, and do not forget that when tomorrow comes, the manufacturer or merchant who is prepared is the one who is going to make a "killing."

Let's throw our shoulders back and raise our chins so that we can look ahead for a minute. There are things just before us that are worth looking at. As an aftermath of an announcement warning the nation of the acute steel situation, Washington is being flooded with telegrams recommending that mill construction for factory buildings be adopted instead of reinforced concrete which requires a large quantity of steel—a precious metal these days—and then the price of cement is three times what it was before August 1, 1914. Common brick plays a very prominent part in the mill type of construction, and the adoption of a plan such as is above mentioned would mean a much more active market for commons.

Refractories, coal and iron ore are commodities that are receiving a great deal of the government's attention right now and there is little doubt but that the fire brick manufacturers will find plenty to keep them busy during the next few years, at least.

Sewer pipe for the new army cantonments now under construction is a development that holds much of interest for the pipe manufacturer. While hollow tile has not as yet received any war orders, there is great possibility for the use of this material in some of the permanent structures which the government is planning to erect in different parts of the country in connection with warehouses and munition depots. "The Silo Needed More Than Ever," is the heading on a leading article in a recent issue of a large western farm journal. This certainly should look good to the manufacturer of silo tile. Drain tile is a product that has come in for some prominence in connection with the food conservation campaign. No argument is needed to convince the wide awake tile manufacturer of the possibilities for a much greater demand for his material thru the efforts of the government and the farmers to produce increasingly bigger crops, and so it is along down the line of products made from clay. They are going to be a bigger factor in the war and in this country's prosperity than any one has yet dreamed of. Why shouldn't we feel happy and stand with shoulders back; chin up.

* * *

A Merited Reproof

THAT MANY MILLS, fabricators, and manufacturers of iron and steel products are refusing to accept ordinary business contracts because of a desire to preserve capacity to meet possible government demands for war materials, is called to our attention by the "Iron Trade Review," in a recent editorial. The editor of that journal goes on to say that repeatedly the requirements for steel, for example, have exceeded by far the original estimate of not over five per cent. on the mills' capacity, but the demand has not been so enormous that it warrants a hysterical cessation of all regular business.

We heartily commend the rebuke which the editor of the "Iron Trade Review" gives to such steel men as are refusing ordinary business. We have every reason to believe that not only "Business as Usual" but "More Business than Usual" should prevail this year, but we cannot hope to keep the normal tide of business flowing nor increase it by encouraging obstructions such as the reservation of manufacturing capacity for war needs, while domestic requirements go begging. This applies not only to the steel and iron manufacturer but to the producer of every commodity in America.

SAVE STEEL *with*

Government Requirements Will Absorb Entire Other Purposes, Is Warning Issued—Mill Construc-

IN THE FACE of declining building activity, which threatens to temporarily affect the activity of factories manufacturing burned clay building materials, comes a warning from the Chamber of Commerce of the United States that the supply of steel available for any other but governmental purposes is negligible, and that "iron and steel should be used only when the requirement is unavoidable . . . that construction and development work requiring steel should be postponed wherever possible."

For months the manufacturer of clay products has seen in the sinking figures of national building an ominous situation constituting a none-too-optimistic indication of the future. High prices of both material and labor, especially the former, are pointed to as the cause for the condition prevailing in the building market today.

Steel above all else may be indicted for being instrumental in bringing about the unhealthy building situation. Not only has this material experienced staggering increases in price which have stunned the prospective builder and driven him to cover to bide the coming of more favorable conditions, but the supply available for building and general purposes has diminished until, as so forcefully stated in the Chamber of Commerce bulletin, practically the entire output of the nation's furnaces is now required for government purposes.

IRON AND STEEL

The bulletin issued, entitled "Iron and Steel," is the result of an investigation conducted by the Committee on Cooperation of the Chamber of Commerce of the United States with the Council of National Defense, and its text is as follows:

The authorities of the Council of National Defense believe that the iron and steel situation should be understood by every business man in the country. It can be set forth in a few words, but directly or indirectly it affects all business. Business policy everywhere should be developed with full regard to this fundamental condition.

The requirements of iron and steel in the prosecution of the war can hardly be exaggerated. Figures cannot be given but the broad statement can be made that the utmost which can be produced is below the requirements of the United States government and its allies and of business closely related to the war. This condition will continue; for on the one hand no substantial increase in production in anticipated, in fact, even maximum production from existing facilities cannot be expected because transportation, labor, and material conditions will interfere with the full operation of plants, and, on the other hand, indications are that the war requirements will continue to increase.

USES IN WAR

The direct requirements of the government for pig iron are relatively small, but the requirements for steel are enormous and iron is therefore required in corresponding quantities. Steel is needed in the war for ships, railroad cars, and locomotives, rails, trucks, containers, etc. Furthermore, there are the requirements for shells and other munitions work, requirements large in tonnage, far beyond what is generally supposed. In addition, business closely related to war, i. e., business producing government materials and supplies, the necessities of life and the materials for producing the necessities of life, require steel in great quantities for buildings, machinery, tools, containers, etc. When all these requirements are met little if any steel will be left for so-called general business.

With no other metal is the condition as disturbing as with iron and steel. Even the supply of copper is not nearly so inadequate. Materials which can be used in substitution for steel are plentiful in comparison. Lumber may be expected to meet all requirements and cement may be had in quantity for concrete work. While there may be delays in these cases a hopeless shortage does not exist.

SUBSTITUTIONS FOR STEEL

The course for business men to pursue is clear. Iron and steel should be used only when the requirement is unavoidable. Every effort should be made to use wood and concrete in place of steel whenever this can be done, and construction and development work requiring steel should be postponed wherever possible.

Where a business uses steel as a raw material and the produce is not used in connection with the war, conservative men will now plan to use some substitute, and if this cannot be done they will doubtless plan to curtail or even to suspend operations during the war. It should be anticipated that the situation which is developing with rapidity will probably make it impossible for them to secure adequate supplies of steel and may even make it impossible to secure any supply.

OUTSTANDING CONTRACTS

Apparently little will be gained by contracting ahead for steel. Experience today indicates that soon producers of steel must ship their product where required in connection with the war rather than on such contracts as they may have on their order books. When the production of railroad cars and locomotives is interfered with because necessary steel is going to industries producing pleasure automobiles, steel furniture, buildings for amusement purposes, etc., the situation cannot be expected to continue.

Business men will probably make their plans in the expectation that soon there will be established an order of distribution of steel, and that the wild scramble to enter orders for future delivery of steel will be ineffective. In fact it will occur to many, no doubt, that failure to recognize this situation may lead to unfortunate results. In a business requiring steel, if contracts are placed for future delivery, not only for steel but for other materials, the manufacturer may find that he cannot get the steel but can get the other materials. In this case he might find that he had on hand large quantities of materials which he could not use because he had no steel.

It will be noted that no reference has been made in the above bulletin to burned clay materials as substitutes for steel, altho the Chamber of Commerce very heartily endorses the increased use of lumber and concrete. It is sincerely hoped that this is but an oversight, and that the discrimination was unintentional. We suggest that our readers send in to Mr. Catchings, Chairman, Committee on Co-operation with the Council of National Defense, Chamber of Congress of United States, Riggs Building, Washington, D. C., a letter of protest, advising him of the oversight committed and suggesting the need for redress.

A. F. B. A. REGISTERS PROTEST

This has already been done by R. D. T. Hollowell, secretary-treasurer of the American Face Brick Association, whose letter, registering a protest against the omission of brick from the list of substitutes, follows:

We have received copy of the National Chamber's War Bulletin No. 2, on the subject "Iron and Steel." We observe from the local morning papers the substance of this bulletin has been used by the Associated Press in

MILL CONSTRUCTION

Output of Nation's Furnaces, Leaving No Steel for tion Offers Partial Solution in Building Field

a despatch, dated Washington, July 1. We assume from this that this same material has been carried by all of the leading newspapers thruout the entire country.

In a very laudable effort to secure the co-operation of business men in the conservation of this country's supply of steel, War Bulletin No. 2 states: "Every effort should be made to use wood and concrete in place of steel whenever this can be done. * * *" The Associated Press despatch carries this advice surrounded by quotation marks.

Brick made of burned or sun-baked clay has been successfully and most satisfactorily used from the earliest history of which there is record. There is no occasion to raise the question of the desirability of this material for permanent construction, as we feel your Commmittee, along with all of the prominent architects and contractors, understand the many merits of this ware.

To give you a more definite idea as to the relative importance of the burned clay industry, beg to advise the Statistical Abstract of the United States, compiled by the Bureau of Foreign and Domestic Commerce of the Department of Commerce, shows that during the year 1914 the average number of wage earners employed in the burned clay industry was 100,182; in the cement industry, 27,916, and in the lumber and planing mill products industry, 576,000. The value of burned clay products during the year 1915 was $163,120,232 and of cement $75,155,102. No figures are given for the value of the various lumber products.

We cannot believe that in compiling War Bulletin No. 2 your Committee deliberately discriminated against both face and common brick by omitting to mention these materials, yet by advising the use of specific building materials an unfair discrimination has been created.

For the information of your committee, this office has on file statistics which show there is no shortage of face brick. An investigation will also show that the price of face brick generally is much cheaper today in comparison with other building materials than was the case three years ago. We have good reason to believe that substantially the same statement can be made in regard to common brick.

We have taken exceptions to the free publicity which your Committee has given to competing building materials, not only because we feel it is the duty of this industry to do so, but also because of the probability your Committee might be glad to attempt some reparation to an industry whose product unquestionably deserves full consideration when questions of economy, availability, permanence and fire resistance are raised.

Returning to the building situation as affected by steel, there seems to be but one avenue of escape open to the building industry during the period of shortage and prohibitive price of steel, and that is to adopt a form of construction insofar as is possible or the character of the work will permit, which will minimize the amount of steel required. *Brick and Clay Record* urges that its readers endorse this campaign for steel-less building and the substitution therefor not of concrete, as suggested in the bulletin, but of brick and lumber in the standard mill type of construction.

The amount of steel required in the construction of industrial buildings of the mill type is far less than that required in fireproof structures, its cost is reduced proportionately, and the use of brick is increased from five to ten per cent. in each operation. Because of its low net cost and the reduced consumption of steel involved, the substitution of mill construction may possibly be the means of keeping up the activity of the building industry during the war.

The advantages of mill construction as compared to fireproof are many and are very completely stated in an article written by F. E. Davidson, former president of the Illinois Society of Architects, on "Economies of Concrete and Timber Factory (Mill) Buildings." Inasmuch as this article was written about a year ago, the figures which Mr. Davidson uses are considerably less than those which prevail today.

The principles of economics as applied to building construction are of mutual interest to the architects and owner, writes Mr. Davidson. Many points are to be considered before investing capital in any enterprise or structure, and the following record of personal experiences in designing commercial buildings may throw light upon a subject which confronts many designers and prospective owners at the present time.

GENERAL CONSTRUCTION COSTS

I have as architect designed and superintended the construction of a great many manufacturing plants, both of fireproof construction and of the type known as standard mill, and based upon the actual construction costs the increased cost of a strictly fireproof manufacturing building is from twenty-five to thirty-five per cent. greater than the actual first cost of an exactly similar standard mill building. In considering these costs I have included everything necessary absolutely to complete the building ready for the owner's occupancy; that is, the heating, lighting, elevators, power wiring, lighting fixtures, sprinkler equipment, window shades, window screens, etc., are all included in the cost of both type of construction.

It is, of course, manifest that the actual cost of many of the items of construction will be practically identical for either type of building. I have designed standard mill factory buildings in Chicago that have cost, complete, including all of these various items, less than seven cents a cubic foot, but I have never been able to secure the construction of a fireproof building including all of these items of cost for less than eleven cents a cubic foot, nor do I know of any accurate data showing any lower costs than those noted above.

When depreciation charges are considered I have always recommended that a depreciation charge of 3½ per cent. per year be charged against a standard mill building, and that a depreciation charge of 2½ per cent. per year be charged against an absolutely fireproof building. This, of course, shows a slight advantage in favor of fireproof construction, considering depreciation only.

As to maintenance charges: It is of course evident that as much outside painting, and in fact as much interior painting and calcimining, or whitewashing, will be required for a fireproof building as for a building of standard mill construction. Practically the only thing which wears and must be replaced in a mill building is the finished flooring, and I do not know of any accurate records of maintenance cost of a standard mill building which will average more than three-fourths of one per cent. per year. Yet, on the other hand, I do not know of any records of the maintenance charges on fireproof buildings which will average less than one-half of one per cent. per year.

As to insurance ratings: Every architect and engineer of course knows that a standard mill sprinklered building is given a much lower insurance rating than an absolutely fireproof building if unsprinklered. And even if the fireproof building is sprinklered the difference in the actual ratings between a standard mill sprinklered factory and a standard fireproof sprinklered factory, with the ordinary occupancy, will only amount to about ten cents per $1,000 per year on the insurable value of the building. These insurance figures can be verified by any one, and I do not believe that any one will dispute them.

ADVANTAGES OF STANDARD MILL CONSTRUCTION

Thus, considering first cost, depreciation, maintenance and insurance only, the argument is all in favor of the standard mill building, and when I refer to a standard mill building I mean a building designed by a thoroly competent industrial architect, who will enclose all stairs and elevators with brick masonry walls and have the openings to same protected with automatic fire doors, and with all windows, with the possible exception of street frontages, of sheet metal and glazed with wired glass, and with no unprotected vertical openings between any floors in the building. These are items which, more than any others, affect insurance ratings on any building.

There are in addition to the questions above noted some additional arguments in favor of the standard mill factory building. One of the principal ones which have recently been brought to the writer's attention is the fact that a skilled artisan will not work if compelled to stand on a concrete floor, if he can secure employment at equal wages in a standard mill building. Many owners of fireproof buildings have had trouble in keeping help, due to this reason only, and in some fireproof factories it has been necessary to cover the concrete floor with a layer of asphalt, or to place cork carpet or wood thereon, in order to render the factory "habitable."

There is yet another argument in favor of the standard mill building, which in any large city should be given serious consideration, and that is the salvage value of the building itself. We all know that a standard mill building can be wrecked, and if the work is carefully done all the structural material can be used in another structure, whereas in wrecking a concrete structure there is no salvage. In fact, I have been quoted by one of the largest contracting firms in Chicago a price for the wrecking of a monolithic concrete building which amounted to a trifle more than one-half of the original cost of the building, and our American cities are growing so rapidly that it would indeed be a courageous investor, or at least one blessed with a prophetic vision, who could predict as to what particular use a certain piece of property would be best adapted for twenty-five or thirty years in the future.

A SPECIFIC CASE

In order that the statement in regard to comparative costs made above may be brought to a definite basis, a specific case will be given in detail.

The tables that follow represent the lowest proposals received by my office on a building to be erected for Walter E. Olson, of 42 South Laflin Street, Chicago. Mr. Olson, whose business is rug manufacturing, decided to build an addition to his present factory and at first purposed erecting the addition of reinforce concrete.

With this idea in view plans and specifications were drawn for a concrete structure, the Condron Co., structural engineers of Chicago, doing the engineering work. After these plans were made the owner decided to find out what a standard mill building would cost him, with the result that another set of plans and specifications was prepared by Davidson & Weiss, architects, Chicago, and bids were taken on both sets of plans, which amounted to practically duplicating the contemplated concrete building in mill construction as nearly as it is possible to have uniformity of design between the two types.

The figures that follow are for the mill type of building and are self-explanatory:

Excavation, concrete foundations and brick masonry complete	$15,884.00
Carpenter work complete	14,374.00
Miscellaneous concrete, including fireproof stairs	3.547.00
Structural steel and miscellaneous iron	7,150.00
Sheet metal	138.00
Cut stone	735.00
Roofing	145.00
Glazing	1,365.00
Steel sash	1,436.00
Fire doors	3,360.00
Fire escapes	1,479.00
Painting	720.00
Plumbing	615.00
Electric wiring	1,100.00
Plastering	90.00
Total	$52,138.00

Exclusive of heating and sprinkler equipment.

On the basis of 598,477 cubic feet, the cost of the building complete as shown from the total cost given above, exclusive of heating, sprinkler and architects' fees, is 8¾ cents per cubic foot. In figuring the cubical contents the space from the bottom of the footings to top of parapet wall is included.

REINFORCED CONCRETE COST PER CUBIC FOOT

For the same building proposals were taken on the monolithic flat slab concrete design and the lowest proposals presented were as follows:

Foundations, reinforced concrete, masonry and carpenter work	$55,941.00
Sheet metal	138.00
Cut stone	735.00
Roofing	145.00
Glazing	1,470.00
Steel sash	1,936.00
Fire doors	3,360.00
Fire escapes	1,479.00
Painting	730.00
Plumbing	725.00
Electric wiring	1,250.00
Plastering	90.00
Total	$62,059.00

Exclusive of heating and sprinkler equipment.

The cubic contents of reinforced concrete design on the same basis as cubic contents for the timber design equal 585,467 cubic feet. Thus the total estimated cost of building, exclusive of heating, sprinkler and architects' fees, would be 11½ cents per cubic foot, and the difference in first cost of the two designs, exclusive of heating, sprinkler and architects' fees, is $15,921.

SUMMARY

The concrete design was made as inexpensive as possible and provided for the use of high carbon steel reinforcing material, and in other ways costs were cut as much as possible, in spite of which fact there was a difference of 2¾ cents per cubic foot in the cost of the two types of construction.

In this instance it will be noted that the cost of the concrete structure would have been about thirty per cent. more than the cost of the mill building, and this saving to the owner was effected in addition to the advantages he gained in the matter of quick erection, etc. The insurance rate is the same on the standard mill building as it would have been on the concrete structure.

It is doubtful if the difference in cost of fireproof and mill construction is as great today as it was at the time Mr. Davidson collected the figures given above; the exceedingly high price of lumber makes it problematical if any very appreciable saving in first cost would be made by erecting the mill type factory. However, the difference in insurance rates for mill construction equipped with sprinklers and those for fireproofing without sprinklers is great enough to warant serious consideration.

However, even tho no saving in any direction would be effected, it is a matter of adopting mill construction because it offers an opportunity to keep the wheels of building activity turning with a much less amount of steel than would otherwise be possible. The cry now is to conserve the steel supply, and therefore, let us unite in an endorsement of the movement to eliminate the use of steel to as great an extent as possible by encouraging the erection of brick and lumber (standard mill construction) industrial buildings.

* * *

Cleveland to Frame Paving Code

The standardization of brick and other pavement, and the reducing of paving practice to a code to be incorporated in the ordinances of the city is the work which has been undertaken in Cleveland, Ohio, by a joint commission of engineers representing the Civic League, Cleveland Engineering Society, Electrical League, Automobile Club, city officials having to do with street construction, and public utility corporations having surface and subsurface structures in the streets.

Most cities have building codes, fire codes, and health codes, but a careful inquiry has failed to show a single city which has attempted to frame a compact and complete code covering the important work of street construction, maintenance, and regulation. The Civic League has sought a temporary expedient, not exactly a solution, to the problem by employing a private expert to oversee and report on the methods and progress of the $10,000,000 street paving program now under way in Cleveland. The reports of this engineer, H. P. Cumings, have only served to accentuate the need for a uniform code. Out of the discussion the following facts and conclusions have developed:

First, that, altho the charter has been in force nearly four years, no ordinances have been framed and adopted properly organizing the engineering and street divisions and distributing the functions relating to street construction and maintenance.

Second, that the present plan of organization does not and cannot secure a maximum of efficiency. Authority is not centralized, responsibility is scattered, and functions are not properly correlated.

Third, that totally inadequate regulations exist, governing the location, construction and maintenance of pipes, lines and conduits under the streets; and too little attention is being given to the preparation of permanent maps, plans and records of subsurface structures in the streets.

Fourth, that inadequate cost records are being kept and insufficient data is being collected from which to determine accurately the width of the pavement, thickness of base, type of pavement, and the apportioning of the cost of paving between the city and abutting property owners.

Fifth, that some effort should be made to improve the appearance of street fixtures by regulating their use and location and avoiding, wherever possible, duplication of fixtures.

The following prominent engineers have been named on the committee: J. W. Frazier, S. E. Doane, James H. Herron, E. B. Thomas, and Wilbur J. Watson The framing of a street code, as of a building code, will lead to a determination, to a large degree, of the relative merits of the different materials used, and an opportunity will be afforded the partisans of each material to press the claims of their own products, as well as to see that undue pretensions of rival materials are not allowed to prevail with the commission which drafts the code, with the result that unfair discriminations are made

* * *

Our Mistake!

In the July 3 issue of *Brick and Clay Record,* on page 55, a news item was published to the effect that E. M. Duke had been placed in charge of a plant as superintendent. It was stated that Mr. Duke was formerly with the American Brick & Tile Co., at Mason City, Ia. There were two errors in the handling of this item, one of which was mechanical and the other was a lack of proper information. In the first place the six lines concerning Mr. Duke, which appeared on the above mentioned page, should have been inserted following an item about the Colburn Brick & Tile Co., of Minneapolis, on page 58 of the July 3 issue. If this had been done the company which Mr. Duke was serving would have been very clear. It is also desired that correction be made of Mr. Duke's former connection, which was the Mason City (Ia.) Brick & Tile Co., instead of the American Brick & Tile Co., of Mason City. Mr. Duke was superintendent of one of the former company's plants, but on the first of September, 1916, he left Mason City to take charge of the Colburn Brick & Tile Co.'s plant at Barr, Minn. This plant has twenty kilns and manufactures 200 tons of hollow ware a day.

* * *

H. C. Moatz Made Vice-President of Medal Co.

H. C. Moatz, treasurer of the Medal Paving Brick Co., Cleveland, has been named vice-president and treasurer, assuming many of the duties of Charles J. Deckman, who resigned as vice-president, effective July 1. "Mr. Deckman's valuable services, the result of thirty years in the paving brick industry, in which he was a pioneer, will not be lost to the company," said Mr. Moatz. "He will continue to make his business headquarters with the firm when in the city, but is now relieved of a large amount of detail connected with the vice-president's position. His advice and co-operation will always be at our service."

* * *

Found! A Philosopher-Clayworker

Philosophers and "mud-mixers" are now and always have been supposedly two very distinct and unrelated species of humanity—the toils of digging clay from Mother Earth, baptising it in fire, man's greatest servant when chained but fiercest enemy when at liberty, and selling it to perform one of the highest missions in the universe, that of housing its human tenants, seems, on the whole, but slightly conducive to activities of the brain cells which turn out gems of thought on mankind in general. Solomons and Brickmakers have only in rare cases claimed anything but a mighty distant relationship.

Consequently, *Brick and Clay Record* feels proud of its discovery in our ranks of at least one person who every now and then pencils off a few lines of philosophic thought. The following is taken from a scratch-pad inspiration, and comes from the pen of J. E. Minter, general manager of the Columbus (Ga.) Sewer Pipe Co.:

IT DOESN'T TAKE MUCH OF A MAN

1—To get mad.
2—To be grouchy.
3—To be a knocker.
4—To say, I told you so.
5—To want every advantage.
6—To blame the other fellow.
7—To take the credit to himself.
8—To see the hole in the doughnut.
9—To credit himself with honest motives.
10—To believe the world is growing worse.
11—To condemn in others things he does himself.
12—To gossip about the shortcomings of the other fellow.
13—To disregard the feelings of others but expect them to highly regard his.

* * *

Terra Cotta Company to Make Crucibles

A new crucible company is about to begin operations in Chicago, Ill. The Northwestern Terra Cotta Co., one of the largest manufacturers of architectural terra cotta, has formed the Chicago Crucible Co. and has equipped a department for the molding of crucibles. Building and kilns are available for a large output and operations will be begun about August 1. The new department is being equipped by Jonathan Bartley of Bloomfield, N. J., who has had long experience in the manufacture of crucibles. He was connected with the Dixon Crucible Co. for many years, but retired some time ago from active service.

The SALES MANAGER SPROUTS *a* NEW IDEA *and* STARTS SOMETHING

He Indicts Himself for Not Discovering Earlier the Advantages of 12x9x3 Over 12x6x3 Refractory Shapes

By G. W. Greenwood, M. A. (Oxon)

Secretary, United Fire Brick Company, Uniontown, Pa.

"WHAT'S THE MATTER, Mr. Baldwin?" asked the General Manager, as the sales manager came drooping in. "You look sad."

"I am," he acknowledged, draping himself over and around a chair. "I've just found out after all these years in the brick business what my head is intended for."

"I wouldn't have any trouble in citing a lot of things it is good for, but what particular use have you so lately discovered?"

"I've just discovered that its principal use is keeping my necktie from slipping off. Here we have been for a coon's age making 12x6x3 silica straights and corresponding wedges, with a few 12x9 straights and wedges thrown in occasionally to break joints. I used to laugh at Si Hawker, but he isn't in my class at all. You don't know Si? Why, his dog which he thought a lot of got its head fast in a pitcher which he valued still more highly, so he cut off the dog's head to save the pitcher, and then had to break the pitcher to get the dog's head out. Now, why haven't we all these years been making 12x9 straights and wedges, with a few smaller sizes, say 12x4½ straights and wedges, to break joints, instead of hammering away at straights and wedges only six inches wide? Sellers started the ball rolling recently by asking why we did not make arches nine inches wide instead of only six, and since that time I have been doing some tall thinking on the subject of sizes."

"I can say one thing," responded the G. M. "Any man who does any taller thinking than you do will have to get on a step ladder to do it. But where does all the difference come in which you speak of? Why make the large size rather than the smaller? Will it increase the sales?"

ADVANTAGES OF LARGER SIZE

"It will do this: The pallet which holds two 12x6 straights will hold two 12x9 straights just as well. Thus we get one and one-half times as much on the same floor space, or in the tunnels, as the case may be. The same drying system dries them, so that we either increase our drying capacity by fifty per cent. or dry the brick in fifty per cent. more time, and in any event at no additional cost. If we take a longer time to dry, we save in burning on account of the brick being more thoroly dry when they are set in the kilns, and also they are tougher and the green brick loss from setting is lessened."

"But if you break a 12x9 brick your loss is one and one-half times what it is if you break a 12x6 brick," suggested the G. M.

"The loss is no greater if the percentage broken is the same in each case," argued the sales manager. "There is no difference between losing one per cent. of two hundred 12x9 straights and one per cent. of three hundred 12x6 shapes."

"I'm Not So Much Interested in How It Is Kept, but I'm Going to Appeal to You for Its Results from This Time Forward," Commented Baldwin.

"That may be all right, provided the percentage broken really does remain the same in both cases. However, waiving my point, altho I still think there is some-

"I've Just Found Out After All These Years In the Brick Business What My Head Is Intended For." "I Wouldn't Have Any Trouble in Citing a Lot of Things It Is Good For," Replied the G. M.

thing in it, how do you imagine it will strike our customers?"

"So far as I can see," responded Baldwin, "it ought to be perfectly satisfactory to them. Take a glass tank, for example. By using brick nine inches wide instead of six inches wide, they will reduce the number of joints in each course, and you know every joint is a weak place in brick construction. Then, again, in laying up a cap the bricklayers will have only two-thirds as many brick to handle, and it doesn't take any more motions to handle a brick nine inches wide than it does to handle one only six inches wide."

"There's a lot in that," agreed the G. M., "but at the same time it is shown in time studies that the shortest method does not always appeal to the man who has already contracted roundabout methods. It reminds me of the man who was carrying a hod. 'So its tinden a mason ye are, Patsy?' inquired a friend. 'Whist! Keep it dark,' rejoined the Harp. 'I'm foolin' the boss. He thinks I'm tinden the mason on the third story, but I'm after carrying the same hod of bricks up and down the ladder all the toime!' Maybe they would rather go through the motions oftener than to accomplish more with the same motions."

"I'll bet he wasn't wearing a necktie," declared Baldwin. "He couldn't have kept it on. All the same, I believe the trade will take to the larger sizes when the advantages are pointed out to them. In any event, we will be happy to conduct an investigation, and at the same time to look into Sellers' suggestion that we start making up arches also twelve by nine instead of twelve by six."

BARNES "DIGS UP" PERCENTAGE OF LOSS

"Just a minute while we are on the subject," said the G. M. as he pressed a button. When the manipulator of figures responded to the call, he asked: "Mr. Barnes, would it be at all possible, without too much trouble, to dig up the percentage of loss in 12x6x3 straight silica and 12x9x3 straight?"

"It wouldn't be such an awfully big undertaking," replied Barnes, absentmindedly confiscating Baldwin's pencil and reaching for his penknife. "How long a period would you like the investigation to cover?" making a gash in the pencil as Mr. Baldwin sadly looked on.

"Say for a year, but in case that is too lengthy a process, make it six months. We just want relative losses on the two classes of brick."

In a few minutes Barnes reappeared with adding machine slips showing the following information:

Amount of each on hand at the beginning of the previous year, in tunnels, kilns, and stock,
Amount made during the year,
Amount set in kilns,
Amount shipped directly from kilns,
Amount from kilns to stock,
Amount shipped from stock,
Amount on hand at the close of the year, in tunnels, kilns, and stock,
Losses in drying, burning, and in stock sheds.

According to his records, the percentages of loss were practically the same in both cases.

The G. M. looked, not at the figures, but at Barnes. "Did you fake those figures, or did you have them already made up?"

"Neither," said Barnes, in his surprise laying down the pencil which Baldwin promptly rescued. "Why?"

"Well, I'd just like to know how you get at all that information. How many other shapes are covered in this manner?"

EVERY SHAPE COVERED

"Practically everything we manufacture. We do not carry rights and lefts separately, but we carry the pieces separately when it takes two or more different shapes to comprise a set. Suppose you suggest some other shape and see how it turns out. Where in the world is that pencil?" he continued, having been nervously rummaging his pockets in search of the pencil.

"Nothing doing," laughed Baldwin. "That was my pencil. Cut up your own. And while you're at it, just bring in your records showing the loss of pencils in the accounting department."

"If the sales department used a few more pencils it might be to their advantage," retorted Barnes, good naturedly, securing an old penholder and starting to sharpen the tip end.

"Well, then, here goes," said the G. M. "When I was at the Ardent plant we used to get production orders for a raft of 18x12x2 tile. They were beastly things to make and get out, because they would break in drying and warp in burning. Let's see how your reports look for these."

As Barnes departed, the G. M. looked at the slips. "You win," he confessed cheerfully, as he handed them over to Baldwin.

In a few minutes Barnes was back with a string of adding machine paper showing totals of these tile made, set, and shipped during the previous year, with the losses in each operation.

A STARTLING REVELATION

When they looked at the results they were electrified. "Mr. Baldwin," said the G. M. who was the first to recover his breath, "can there possibly be any money in these shapes?"

"Search me," said Baldwin, as he scratched his head with the mutilated pencil "I am reminded of a friend of mine in college. We were discussing the subject of ghosts which were supposed to haunt Teddy Hall, so I asked Ritchings if he really believed in them. He said he did not in the day time, but that at night he was never quite so sure. I thought when we were getting such a good base for these shapes we must be making money on them, but in the light of such losses I am by no means so sure."

"In other words, you are just the opposite of your friend Ritchings," remarked the G. M. "He was certain in the light and uncertain in the darkness. You were certain in the darkness resulting from a lack of detailed information, while you are uncertain in the light of these results. Now if we divide the cost of all the shapes made by the number which came out in condition to ship, the cost will go up like a fire balloon at a Fourth of July celebration. What do you think?"

"I think that while a fire balloon is full of hot air, it is at least self supporting, which is more than I am ready now to claim for these shapes at the prices we have been getting. Here, Barnes, you can have the damaged pencil, and if you need more to dissect let me know and I'll set 'em up."

"No, thank you," said Barnes. "You keep it. You need a pencil worse than I do. But what do you think of our Perpetual Inventory, from which these results are obtained?"

"It strikes me that it is a jim dandy record," said the G. M., "and when I have a chance I want to see how it is kept."

"I'm not so much interested in how it is kept, but I'm going to appeal to you for its results from this time forward," commented Baldwin as they walked out through the offices, deserted by all save themselves, when the closing hour had struck some time before.

CHICAGO *is* HOLLOW TILE HEADQUARTERS

WHEN THE HANDFUL of hollow tile manufacturers, who had faith in the future of their business and the ability of the individuals engaged therein to get together for the mutual benefit of all concerned, announced a meeting to be held at the McAlpin Hotel on March 8, the clay products industry little dreamed that this was to be the beginning of a reorganization of the Hollow Tile Manufacturers' Association of America on a new and permanent basis. But that is just what happened and now, after several months of hard work on the part of the manufacturers and the new secretary, E. R. Sturtevant, the hollow tile manufacturers have re-established an association office, this time in Chicago.

Following the New York gathering, the manufacturers met in Cleveland, on March 28, and voted to form a new association, choosing for its name the Hollow Tile Manufacturers' Association, and electing H. C. Downer as president. E. R. Sturtevant, formerly superintendent of the Abingdon (Ill.) Clay Co., which was very recently sold to the Clay Products Co. of Brazil, Ind., was chosen as secretary-treasurer, starting April 1.

The new association launched out with a membership representing 1,300,000 tons of manufactured ware, out of the two and one-half to three millions tons which is estimated as being the country's total production. The total capacity of the present membership has reached the enormous figure of 2,200,000 tons.

The association is composed of groups, which are eight in number. Each group is represented in the government of the body by a director, or vice-president, these offices being one and the same. The directors are elected by a majority vote of the association in regular session. B. C. Keeler, of the Mason City (Ia.) Brick and Tile Co., is a director, as well as Frank R. Hale, of the Vigo-American Clay Company, Terre Haute, Ind.; J. B. Whitacre, of the Whitacre-Greer Fireproofing Co., Pittsburgh, Pa.; H. M. Keasbey, of the National Fireproofing Co., New York, N. Y.; G. A. German, of the Sun Brick Co., Toronto, Ont., and James T. Howington, of the Coral Ridge Clay Products Co., Louisville, Ky. It is apropos to mention at this point that Mr. Howington is also president of

E. R. STURTEVANT
Secretary-Treasurer, Hollow Tile Manufacturers' Association

the Southern Hollow Tile Association, which has allied itself with the national organization.

In closing, it might be said that the Hollow Tile Manufacturers' Association expects to receive on the first year's assessment of two cents per ton, payable monthly, a sum amounting to approximately $45,000. Plans are being laid to hire a competent code man at a very early date, and it is more than possible that before many months have passed a well-defined program of publicity will be announced. The offices of the association are in suite 1409, Conway Building, Chicago.

* * *

Fire Destroys Two Belleville (Ill.) Plants

Fire very seriously damaged the plant of the Standard Brick Works at Belleville, Ill. According to Warren W. Ittner, president of the company, a loss of more than $15,000 has been suffered. The fire broke out at one o'clock on the morning of June 28, and was not brought under control until about four o'clock: The greatest damage resulted to the company's machinery, the engine house being completely destroyed by the fire and the engines ruined. The rest of the equipment at the plant is also very badly damaged The Standard Brick Works is owned by the Belleville (Ill.) Brick & Tile Co., of which Warren W. Ittner is president, Edward Abend, secretary-treasurer, and C. P. Tomlinson, general manager. Plans for the reconstruction of the destroyed buildings and the replacement of the damaged equipment have already been made and it is the intention of the company to erect a larger and more complete plant than the one which was destroyed.

Just a week after the fire at the Standard Brick Works, at Belleville, another fire occured at the Kloess Brick Works of the same town. The fire broke out at 3:50 o'clock on the morning of July 5 and was noticed by motorists, who turned in the alarm. Two kiln tops were destroyed by the blaze, which caused a loss of $1,500.

* * *

"Bob" Mitchell Resigns to Enter Home-Building Field

Robert C. Mitchell, for the past five years sales manager of the Barkwill-Farr Co., Cleveland, Ohio, and its predecessor, the Farr Brick Co., resigned from that position to assume the management of the Homesuite Home Co., which has been organized to solve the housing problem in that city by the construction of communities of moderate priced fireproof homes.

The crying need for housing facilities of any kind in Cleveland, due to the great increase in population brought on by the great activity of the war industries, has afforded Mr. Mitchell the opportunity of carrying out a long-cherished dream of building ideal small homes of fireproof materials on such a large scale that the cost may be minimized and the homes sold at a small profit to men of modest means. Mr. Mitchell was one of the chief promoters of the Society Advocating Fire Elimination, which began a national campaign along these lines three years ago.

"Options have been taken on one hundred lots, and the first one hundred houses, to be started shortly, will represent an initial outlay of $450,000," said Mr. Mitchell. "The houses will be designed on the community plan, like the Garden City developments in England, every one hundred houses or so having a central heating plant and park with recreation grounds and gardens.

"Every house will be of hollow tile construction, some faced with brick and some with colored stucco. Each house will have some mark of distinction to distinguish it from every other. The average house will be six rooms and bath, modern thruout The capital back of the Homesuite Home Co. is sufficient to permit the selling of the homes on easy terms. The object will be to turn rent payers into home owners."

Mr. Mitchell began an active business career several years ago, when he organized the Contractors' Supply Co. He then became sales manager of the Cleveland Builders' Supply Co., and left that position about five years ago to become general manager of the Farr Brick Co. At the time the Farr Brick Co., the Barkwill Brick Co., the Cuyahoga Brick & Shale Co., and the American Brick Co. were merged into the Barkwill-Farr Co., Mr. Mitchell becames sales manager of the new concern.

"Mr. Mitchell's project is an answer to the statement of Cleveland industrial leaders that unless something radical is done thousands of Cleveland workmen will be living in tents," said Ralph P. Stoddard, secretary of the S. A. F. E. "His new work will be along the lines of brick and clay construction, which he has been studying for a number of years, and his success will mean the adoption of his methods in other congested industrial centers. Mr. Mitchell has always been a producer, and that he will succeed in his new enterprise is the belief of Cleveland supply men and capitalists."

* * *

Making One Car Do the Work of Two

The Railroads' War Board recently informed the railroads of the country that by making repairs quicker, by a better movement, and by heavier loading, it was in the range of possibilities to make such a saving in the use of freight cars that it would be equivalent to adding to the available equipment 779,000 cars. Carriers and shippers have been asked as a patriotic duty to strive to attain that goal. The following gives the first general report of results actually accomplished:

Reports to the Railroads' War Board of the service performed for the public in April by railroads of the United States operating fifty-one per cent. of all the mileage—all roads have not yet reported—show that they produced for the public more than three billion ton-miles of freight transportation than they did in April, 1916, when business was at high tide, as it is today.

In April the railroads showed an increase of sixty-six tons, or 10.4 per cent. per train, and 2.4 tons, or ten per cent. per loading of cars, equivalent to the addition of 126,000 cars to the equipment of the roads reporting. This result was accomplished with but 4.3 per cent. more locomotive miles and five per cent. more freight car miles.

Some conception may be had of the magnitude of this increase of sixteen per cent., or 3,354,000,000 ton-miles, in one month, on the mileage covered by the report, from the fact that it is equivalent to adding 35,000 miles of railroad to the roads in the United States, with a density of freight traffic on each mile equal to the average density for all railroads of the United States for 1915. This addition to the fixed plant of the railroads exceeds the total mileage of the railroads of Great Britain in 1914 of 24,000 miles, and nearly equals the total mileage of the railroads of Germany in 1913, of 38,154 miles.

PROGRESS MADE IN INCREASING CAR EFFICIENCY

The drive the Railroads' War Board is making to get railroads and shippers of the United States, as an imperative step in national defense, to make every freight car do the work that two did before the war, is having telling effect. Reports just received by the board indicate prompt acceptance of its suggestion that loading freight cars ten per cent. in excess of their marked capacity would be equivalent to adding immediately to the supply of available equipment approximately 200,000 cars.

The Commission on Car Service has informed the Railroads' War Board that one railroad in the month of April hauled 2.92 tons more per car than in April of last year, thus saving on this one road the use of 58,473 cars. In the month of May the same railroad hauled 1,414 pounds more of less-than-carload freight per car than in May, 1916. This saved 6,319 cars.

SENDING CARS WHERE THEY ARE NEEDED

To help those producing communities, and shippers, and those railroads, which by reason of their economic situation are suffering from a shortage of freight cars, the Commission on Car Service has ordered those railroads, on which cars accumulate in congested territories, to turn over to roads on which shortage exists cars to the number of 34,245. These cars are being sent in train load lots direct to the points where they are most needed. Reports today show that more than 19,000 of these cars have already been delivered.

SHORTAGE CUT ONE-THIRD IN MAY

Shortage of freight cars in the United States was reduced during the month of May from 148,627 to 105,127 cars, almost one-third.

This marked reduction in one month, following four months of rapid increase, is attributed to the prompt response on the part of both shippers and railroads to the specific suggestion which has been made by the Railroads' War Board as to how to secure more effective use of existing freight equipment.

The progressive improvement in the situation is indicated, in that on March 1 reports made by railroads to the American Railway Association showed a shortage in the entire country of 130,082 freight cars. The shortage grew to 144,797 by April 1, and on May 1 the shortage had reached 148,627 freight cars.

* * *

New Concern Takes Over Indiana Company

A big industrial deal, which is reputed to have been under development for several months, was consummated on June 12 in the incorporation by Edwin M. Brown, of the Standard Brick Co., which is to take over all the property and stock of the Standard Brick Co., of Crawfordsville, Ind. The capitalization of the old company amounted to $100,000, while that of the new corporation is placed at $800,000.

The development of the new company has been brought about largely thru the efforts of Mr. Brown, who has been secretary of the old company for several years and who will play an active part in the management of the new concern. Realizing the value of the extensive shale deposits which are said to be available, Mr. Brown succeeded in interesting Chicago capitalists in a mammoth enterprise for the manufacture of building and paving brick.

The present capacity of the plant, which is 45,000 brick a day, will be increased during the summer to 100,000 brick by the addition of twenty kilns, according to present plans. It is hoped that within the next two or three years the capacity will be still further increased, reaching to 400,000 a day. The number of men employed is now sixty, but will, before the summer has passed, be increased to one hundred. This great expansion will make the clay working industry the dominant commercial feature of Crawfordsville. Ray Thomas, manager of the plant, under whose direction the improvements and enlargements of the past three years have been made, will continue in his present position.

* * *

The Taylor, Smith & Taylor Pottery Co., at Chester, W. Va., has just fired off its new bisque kiln, the additional kiln giving the company a battery of fifteen kilns.

* * *

TAPPING *the* VEIN *of* PUBLIC DEMAND

For bigger better crop drain tile your land
COLUMBUS SEWER PIPE CO.
WHOMPUS CHIEF OF SANITATION
MEMBER CHAMBER OF COMMERCE
GREATEST FIRE PREVENTION
LINE YOUR CHIMNEYS WITH FIRE CLAY FLUE LINING.

The Columbus (Ga.) Sewer Pipe Co. is a strong disbeliever in that doctrine which says something about the world beating a path to the doorway of the man who builds a better mouse-trap than his neighbor, even tho he reside in the wood. Charged with the spirit of the twentieth century, it believes that to attract the world from the old thorofares onto a pathway leading to its doors, it must advertise—tell them about its goods. The pictures show a few of the displays which have been used in the past few years to impress upon the minds of Columbus people the desirability of Columbus sewer pipe. The upper left hand picture shows a float supported by the company in a Civic Pageant Parade in Columbus, while the other two photographs are of flue lining, drain tile, and sewer pipe exhibits.

OVERCOMING CRACKING *in* DRYING CLAY PRODUCTS

Some Light Thrown on Drying Problems Which Will Help Determine the Cause of the Trouble and the Nature of Its Remedy

By Otis L. Helfrich

Author of "Notes on Waste Heat Tunnel Dryer Operation" and "Prolonging Belt Life."

WHEN A CLAY PLANT MANAGER finds defects in any phase of the manufacture of clay wares he usually has trouble in discovering the real basic cause or causes that are the trouble-makers. The often repeated phrase, "No two clays are alike," is so true that no reliable set of rules can be laid down that will apply to all cases. What is really necessary is a good understanding of the make-up of the clay body and a knowledge of what takes place in the clay itself, during the processes of forming, drying, and burning.

For example, if a person knows what actually happens to a clay body during the drying process—why it does or does not shrink excessively, how the water gets out, and all the other things that occur during the drying stage, he is in a much better position to experiment *intelligently* toward getting rid of his troubles, than he would be were he to start out blindly to do the hundred and one things that he has heard might help him. This article is written for the purpose of making clear the things that really happen in the clay body during the drying process, so that the elimination of difficulties arising in drying may be more easily and intelligently accomplished.

Clay itself cannot be considered as a single substance. It is composed of granular particles of possibly many different kinds of mineral matter. These particles are coated over with a thin layer of colloidal matter and it is this colloidal matter which causes the plasticity, bond, and drying shrinkage of clays. Therefore, a fair understanding of how this colloidal matter acts under various conditions is important.

BEHAVIOR OF COLLOIDAL MATTER IN CLAY

The colloidal matter of clay may be said to resemble a sponge in that it contains minute pores. When water is added to it, it expands or swells and when this water evaporates, it shrinks again and sets into a more or less solid body which forms the bond of dried clay ware. When the green brick shrinks in the drying, it is not the mineral particles of the clay which shrink but the colloidal matter which surrounds them. From this it is apparent that the amount and character of colloidal matter present in a certain clay determine its plasticity, shrinking behavior, and the dry strength of the dry ware. This is important to remember because the character of its presence can be changed one way or another by the additions of various alkalies and acids or by giving the clay different treatments before it is formed into the brick or other product. For example, if a clay shows too much plasticity and shrinkage and it is found that cracking is caused by this factor, the addition of a small percentage of an alkali salt, such as potassium hydroxide, will break up the character of the colloidal matter and thus cut down the shrinkage and the tendency to crack from that source. More will be said about this later.

CAUSES OF CRACKING IN DRYING

Following is a list of the possible causes of cracking during drying and a discussion under each cause of what might be done to remedy the trouble.

1. Uneven drying.
2. Imperfect pugging.
3. Insufficient mixing of two or more clays.
4. Too dense a body.
5. Flows developed in molding.
6. Lack of tensile strength.
7. Too rapid drying.

1. The trouble of uneven drying appears when large ware is made, such as sewer pipe, large drain tile, etc., and the hot floor method of drying is used. A sewer pipe set to dry on a hot floor will dry first at the top end because of the better ventilation at that point. The method generally used to counteract this, and which is quite successful, is to turn the ware upside down after the top has become somewhat set. This does not give uniform drying from end to end of the piece but the ware will usually stand the strain of having one end partially dry first without cracking.

When the ware is so large and clumsy to handle that turning is out of the question, then the drying of the top end of the piece must be retarded in some way. This is done by covering the top with paper, burlap or some other kind of material which will hold the moisture in and thus retard the drying at that end of the piece of ware, causing approximately uniform drying from end to end. If this method is found unsatisfactory, the entire sewer pipe or tile can be covered with some kind of material which will make the whole piece dry more slowly and uniformly from end to end.

Uneven drying can also be caused by having air currents hit one side of the ware. In hot floor drying it frequently happens that the ware near the windows are cracked on the exposed side, due to air currents striking that side and causing it to dry more quickly than the other side. The ware should be protected from these air currents by some sort of screens that would deflect the air. A better method is to have the windows built high enough so that the air will come in over the top of the ware instead of directly against it.

IMPERFECT PUGGING CAUSES LOCAL HARD SPOTS

2. Imperfect pugging of clay causes local hard or soft spots in the clay body. If the water is not worked uniformly thru the mass of clay, there will be "dry spots" thru the formed clay body in some places. It naturally follows that the soft spots in the clay body will have more shrinkage than the hard spots because shrinkage in clay varies proportionately with the amount of water added. When you have one por-

tion of a clay body shrinking more than another portion, strains will be set up in the clay body itself, which very often leads to cracking.

The presence of these dry or wet spots in the clay column is very easily determined by breaking open a portion of the column as it comes from the die. The dry, unpugged portions can easily be distinguished from that portion which has been thoroly pugged. The remedy is to increase the efficiency of the pug mill or to add more pugging machinery.

A great many plants of the more modern type have installed two pug mills instead of one, the clay being run thru both mills. This, of course, is a splendid arrangement and a perfectly safe one; no clay ever receives too much pugging. But it is possible that the present pug mill is not doing as much work as it is able to do, and if one pug mill will do the work by being run more efficiently, it is, to say the least, unnecessary to add another.

INCREASING CAPACITY OF PUG MILL

A great many schemes have been successfully used to increase the pugging capacity of a pug mill. If more "mixing" knives are added, the clay will be forced to stay in the pug mill longer and thus receive a more thoro pugging. Another way to make the pugging more perfect is to pug with hot water, the hotter the better. The colloidal matter of the clay takes up hot water and leaves the clay in a much better pugged condition. Whatever the means used, be sure that the clay is properly pugged before going to the machine. Many people are looking to their dryer for the cause of cracks that are really due to insufficient pugging rather than poor drying conditions.

Another feature of poor pugging comes up in the way the waste brick are returned to the pug mill. It sometimes happens that the waste brick from the off-bearing belt are returned to the pug mill and dumped into the mill at or near the discharge end. From there they almost immediately drop into the brick machine, having received very little additional pugging or mixing with the other clay. During their progress over the cutter, these brick become covered with oil and when they return to the pug mill, they carry a lot of this oil with them. If they are not thoroly pugged again and mixed with the other clay, it is almost impossible to get the oily pieces to weld properly and bad laminations are the result.

This is especially important in the manufacture of paving brick where lamination is always a bugbear. In bad cases it is recommended that the waste brick be returned to the dry pans instead of the pug mill. It is often even advisable to convey this material back to the storage shed and allow the ware to be thoroly dried, sending it from here to the dry pan, where the hard surface is crushed, and then to the pug-mill. If the ware is returned immediately to the pug mill be sure that it is dumped into the receiving end of the mill instead of near the discharge end, for this hackers' waste clay needs more pugging than any of the rest.

CRACKING DUE TO INSUFFICIENT MIXING

3. In almost all cases of manufacturing clay wares there are at least two different clays used. It may be only the difference you find between the clay from the top of the bank and that from the bottom. But if real tests are made of clays from these two portions of the bank it will almost invariably be found that there is considerable difference in their physical behavior—such as drying shrinkage.

This difference in drying shrinkage does no harm so long as the two clays are thoroly mixed. But it may lead to real trouble if the clays are not so mixed. For example, suppose one clay had a drying shrinkage of five per cent. and the other a shrinkage of ten per cent. Suppose, thru improper mixing of the two, one half of the brick was composed of the one kind of clay and the other half of the second clay. Can you imagine one-half that brick shrinking five per cent. and the other half ten per cent. without having cracks appear? This, of course, is an extreme case, but the same principle holds true no matter how small the portions of unmixed clays are. If there is only one cubic inch of clay in the brick which has a different drying shrinkage than the clay surrounding it, there will be strains set up at that point when the brick dries which may result in cracks. If cracks do appear, they are usually not noticeable in the dry brick but cracks of this kind will have a very sad effect upon the finished product and may be the answer to some of that loss which is hard to account for. In the case of paving brick, the rattler loss will be very great.

Proper mixing of clays has an important bearing on other phases of manufacture, such as burning, color, vitrification, etc. Its relation to drying and drying cracks is very often overlooked but proper mixing also has effects here that are of prime importance.

OVERCOMING CRACKS DUE TO GREAT DENSITY

Clays that are very dense or tight grained are usually quite plastic and have a high drying shrinkage. Because they are tight grained the water does not flow freely and rapidly to the exterior of the ware to be evaporated. This results in the surface of the ware starting to dry and shrinking while the interior retains its water. As the outside skin begins to shrink while the interior retains its original size, a strain is set up which often results in cracking.

The obvious remedy is to bring about a condition whereby the water will flow freely to the surface of the ware. This can be done in two ways, the first of which is by adding sand or grog. This opens up pore space in the clay body to allow of freer passage of the water and also reduces the excessive shrinkage of the clay.

The second method is to subject the ware to a steaming process before the real drying begins. In the steaming process the clay is warmed up by steam before evaporation takes place. When the water and small pore spaces in the clay are heated, water will flow to the surface much more rapidly than when both clay and water are cold. Thus, the same result of a faster flow of water from the pores is obtained as when sand or grog is used.

The ability to give this steaming to the clay depends somewhat on the type of dryer used. With the old fashioned periodic dryer, where the tunnels could be closed with no draft going thru them, it was easy to get the steaming condition. But with the waste heat tunnel dryer generally used at the present time it is a more difficult task. However, by proper control of the draft, a condition approximating a thoro steaming can be obtained.

CONTROLLING DRAFT TO STEAM CLAY

If the flues leading to the exhaust fan on the dryer are partially blocked, the steam will not be carried away from the cold end of the dryer so rapidly. By careful control of the draft in this way, the air in the cold end of the dryer can be kept saturated. With the air in this condition the brick will be given a steaming before the actual drying begins.[*]

Just how much the draft will have to be cut is a matter to be worked out for each dryer, but that task is not difficult nor does it require a great amount of time. Of course, when the draft is cut down in this way the capacity of the dryer will be reduced. By experiment it may be found that steaming the day's run will not have to be carried on all night, and that the draft can be increased to normal again at some hour of the night. This will increase the capacity to a great extent as it will carry more efficient drying conditions over a certain period of time.

---

[*] **Editor's Note:** Care must be exercised in an operation of this kind or trouble due to scumming may result. Since in the combustion of coal some sulphur dioxide gases are always evolved, some of this gas will be drawn thru the waste heat dryer. Sulphur dioxide is soluble in water and hence a portion of it will be taken up in the saturated atmosphere, forming sulphuric acid. Should any condensation occur this moisture containing the sulphuric acid will settle on the brick, giving an opportunity for the acid to react with any lime present in the clay to form calcium sulphate, which is our old enemy, scum. This, of course, would not make itself apparent until the brick are burned.

If the dryer is provided with the sliding dampers described in the article on "Notes on Waste Heat Tunnel Dryer Operation," which appeared in the May 22 issue of *Brick and Clay Record*, it would be only a five-minute job for the night watchman to increase the draft at that hour of the night which was found by experiment to be safe.

A third remedy which would tend to prevent cracking in dense and plastic clays is to add an alkali salt. This would cut down the excessive plasticity and shrinkage of the clay and tend to prevent cracking. This method has been used for high grade ware, but the writer knows of no case it has been used for rough grades of clay wares, such as brick, tile, etc. However, by experimenting with the amount required and figuring the cost per thousand brick, it may be possible that the extra cost involved would not be prohibitive.

LAMINATION AND CRACKING

The flows due to molding generally show up as lamination. There has been so much written about lamination in this magazine that the writer feels that he is going over pretty well-tramped ground. However, it will not come amiss to say a word about it here.

There are two general kinds of laminations in stiff mud ware, those appearing as auger lamination and those caused by the die. A die that is not properly lubricated will cause the column to suffer at its corners. This can sometimes be remedied by regulating the pressure of the steam, water, or whatever is used as a lubricant. It sometimes is caused by not taking care to place the liners exactly in their proper place when the die is changed. This die lamination is not so important nor is there so much of it today as in the past because machinery manufacturers are becoming more expert in filling the needs of clay plants for properly designed dies.

A far more important phase of lamination is that due to the auger. In the first place the auger may not be designed correctly for the clay. A single wing auger will often cause lamination when a double wing would not, or vice versa. Or again, the nose of the auger may be too close to the die. But all these points are things which must be worked out by each plant superintendent and the machinery men.

However, laminations may be caused by simply not operating the machinery that is on the plant correctly, which should be determined before expensive changes are made on the machinery itself. The most frequent cause of lamination is running the machine too fast for the amount of material going thru it. When this is done, the back of the machine is running partly empty, allowing the clay to slip back on itself and laminate. An enormous pressure is required to force the clay thru a die and when there is no background of clay behind the auger, it allows part of it to slip back. This causes a tear thru the body of the clay which does not usually heal before going thru the die. This slipping back of the clay on itself is especially apt to happen when the clay is short. This shortness, in turn, may be due to too much of the crop being used and, in that case, the remedy is obvious.

COARSE GRINDING HELP MINIMIZE LAMINATION.

Another thing which may cause lamination is the clay being ground too fine. This causes an exceedingly mushy and plastic condition of the clay, which does not unite as readily as the same clay ground coarser. It has been found true, especially in making paving block, that a coarse ground clay body unites much freer from lamination than the same clay ground fine.

The bad effects caused by allowing the oily waste brick to go back into the discharge end of the pug mill has already been spoken of, but it is well to emphasize that point by repeating it here. That alone is the cause of much unnecessary lamination. First try the experiment of dumping the waste brick into the receiving end of the pug mill. If that helps some but does not eliminate the trouble altogether, try running the waste brick back to the dry pan instead of the pug mill. It may be found that this will eliminate the lamination entirely. If not, sending the material back to the storage shed may solve the problem.

Badly worn augers cause lamination; the factory foreman should be very careful about getting in the new augers in time. Experiment with the augers and determine just how many brick they will turn out before being worn long enough to cause lamination. Then see that they do not stay in the machine a day longer than that. This particular trouble is one that has to be watched constantly.

In no other phase of clay working is there more variation in clays than is found in lamination and its cause. An auger that might work perfectly on one clay may prove a total failure when used on another clay of apparently the same type, and this variation holds true for the other causes of lamination. It is simply a case of knowing your own clay and then finding whether it will or will not laminate under certain conditions.

It is hardly necessary to point out what these laminations do in the drying stage. The drying simply makes worse the cleavage that is already present. The method of drying has nothing to do with these kind of cracks.

INCREASING COLLOIDAL MATTER STRENGTHENS CLAY.

6. Clays lacking tensile strength are those which have a very low plasticity. In clays of this kind there is not enough colloidal matter surrounding the mineral particles to give the necessary plasticity and bonding strength to the clay. Or it may be that the colloidal matter is present but in a form which does not take up the water readily and thus give the clay the needed plasticity and bonding strength during the drying process and after. When the shrinking starts on a clay body of this type, the colloidal matter does not furnish the necessary bonding strength and the clay cracks. The remedy is to increase the colloidal matter and thus give the clay a higher tensile strength.

This can be done in several ways under two general heads. First, by giving the clay various treatments that will increase its plasticity and tensile strength and, second, by adding certain materials to the clay which will increase the colloidal matter and thus give to it the needed plasticity.

The most important method under the first head is pugging. The more pugging a clay gets the more plastic it will become and the greater will be its tensile strength in drying. Some of the flint fire clays, if given an ordinary pugging thru a pug mill will have very little plasticity or tensile strength. The same clay put thru a wet pan and given a thoro pugging in this way develops a great deal of plasticity—ample for all working conditions. This illustrates the value that may come from thoro pugging. Of course, a wet pan is not practical on plants of all types but neither is it necessary. A word has already been said about the ways in which the horizontal pug mill may be made to do better work.

There are other ways of increasing the plasticity of clay, such as storage in bins for a certain period, wetting down the clay occasionally, etc. But on the ordinary plant, the only way of imparting plasticity to the clay is thru the use of the pug mill. It is therefore very important to have the pug mill doing its work at a high degree of efficiency to obtain the best results in drying.

When it comes to adding some material to the clay to increase its plasticity, the most practical method is to add another clay possessing highly plastic properties. That is like adding so much colloidal matter in a diluted form. There are numerous plants where this is working out nicely. There is a bank of plastice surface clay near almost every brick plant and some of this may work in very nicely with the clay use. At least it is worth a tryout.

It may be that is samples are tested from the difficult parts of the clay bank, a wide variation will be found in the plasticity from the different sections. By choosing the mix with more of the plastic and less of the non-plastic clay, a brick may be made that will have all the good qualities of the former brick and yet not crack in drying. Do not become impatient with experimenting, for it only by means such as these that the majority of brickmaking problems are solved.

Another method of increasing plasticity is to add an acid, such as muriatic acid, in a diluted form. This will be found to increase the plasticity up to a certain point. But it does not seem that this is a very practical method to use for the rougher grades of clay ware, as brick, tile, etc. However, it will increase the plasticity and tensile strength of the clay and may be used as a last resort.

RAPID DRYING CAUSES CRACKING.

7. Too rapid drying will cause cracking by drying the outside skin of the ware before the water on the inside has a chance to flow to the surface to be evaporated. If it is thought that rapid drying is at the seat of your drying trouble, keep in mind that there are two ways to remedy it. First, by drying slower; second, by opening up the pores of the brick so that the water will flow more rapidly to the surface. This was discussed before in the case of the clay having too dense a body. Obviously, the second method is the better one for by using it the dryer capacity is not cut down as it will be when the drying is slowed up.

This article does not pretend to give the direct solution for individual problems. Rather it attempts to cover general principles which may throw some light on any drying problem. When a drying problem is being considered, the important thing is to determine the real cause for the trouble. When this is found, half the battle is won. Keep in mind that cracking is more apt to appear just as drying starts or just before the brick are dry.

Then make a study of your dryer. Be sure that you understand just what is going on in each section of it. Know whether the brick are being steamed when they first enter the dryer or whether the drying starts immediately. Also know what condition the clay column is in as it comes from the machine; not the outside appearance of it, but what the really important inside structure is like.

And finally go in strong for experimentation. If you have an idea that some little change in clay or dryer might get rid of some cracks, try it out. Do not go half ways on it. Give it a thoro tryout and keep accurate records of what happens. It may be a long journey but usually tactics of this kind ultimately do away with the troublesome crack.

BETTER TIMES AHEAD *in* GOTHAM

STIRRING up a hornet's nest is a mighty poor business, as Lord Northcliffe found out when he took a crack at the cotton business of the South, according to information from New Orleans, but Northcliffe is like some other folks in the business of printing newspapers. and after all a hornet's nest isn't half bad compared with some other things for a newspaperman to tackle in these strenuous days. Furthermore, the fact that cotton growers are firing in broadsides upon their representatives in Congress, making a howl against the Britisher's plan suggested to the Department of Agriculture for regulating the cotton markets, isn't worrying a lot of folks in the building business. Congressmen can fritter all the time away they want to over the big and the little things of life, but what some folks would like to know is, when is something going to be done to prove that everybody in official Washington is as sincere as President Wilson is about letting business proceed as usual? A big fuss was made recently about fixing the price of coal. What manufacturers want is to have it fixed "right," to stay fixed right, and then to be shipped right on time. This would mean a long step in the right direction as regards the building business for the months to come.

FULL FREIGHT CARS AND BUILDING

Clarke G. Dailey recently, writing in the "Record and Guide," said that the progress of many a building has been seriously hampered by waiting for materials from out of town. That is the trouble in a nutshell, not only with shippers of building materials but also with manufacturers who receive raw materials.

A little circular has been sent out by Uncle Sam calling upon folks to have a heart and not use a whole freight car when half a one would do. For instance, in a certain New Jersey town there lived a rich woman who made a practice of calling up a grocery a mile away and placing small orders, oftentimes for nothing but a cake of yeast worth two cents. The storekeeper, striving to please, would have his man drive a mile to the house and a mile back to make the delivery. Result, satisfied rich woman, sore merchant, wear and tear on the wagon and poor old horse and no profit to anybody. It's been a good deal this sort of thing that has caused freight congestion. The sooner shippers realize that freight cars loaded to the gunwales are more profitable than freight cars with small loads the sooner we all will be better off.

Kansas City sent word to New York this week like this: "A little more cheer as to business conditions from the East and a gleam of encouragement in the Eastern press would be a boon to Western business, for we get our ideas of national affairs largely from the seaboard."

Now somebody out in the Middle West has slipped a trolley or gone clean plumb off the track, for folks here are full of cheer and full of optimism. New York has gone back this year as compared with last regarding volume of building business, but despite this the whole town is full of life, cheer, vim, vigor, pep, soldiers, war talk, and other things of lively nature. There are some things that cannot be said, for the simple reason that we are at war and we have a censor and here in New York we know it. New Yorkers are mighty busy looking pleasant and bidding good-bye to the boys in olive drab with a cheer. Optimism is and has been running loose here for so long that it would really hurt some people to appear serious.

BETTER TIMES AHEAD

To be sure, the bottom certainly did slip out of the building construction and real estate market and it is still slipping, but there are better times coming, and when they do arrive old New York will receive them with an outburst of pent-up enthusiasm and energy.

(*Continued on Page* 149.)

SUGGESTED IMPROVEMENTS *in the* MANUFACTURE *of* SILICA BRICK

Results of Extensive Tests Having Great Value for the Silica Brick Manufacturer Are Given in This Article

By C. E. Nesbitt and M. L. Bell

Read Before the Annual Meeting of the American Society
for Testing Materials, Held at Atlantic City, N. J.,
June 26 to 29.

In this paper the authors first point out the necessity of the co-operation of the investigator, the maker, and the consumer before much can be accomplished in the way of improvement of the product.

The present method of making silica brick is next outlined in a general way, followed by some experimental work which illustrates the importance of the degree of fineness to which the raw material is ground and the benefits which may be derived from power pressing.

The paper is then brought to a conclusion by pointing out the defects that increase the failures in actual service and how to keep them reduced to a minimum.

THE STUDY OF SILICA REFRACTORIES is receiving more and more attention as shown by the increased number of articles appearing in the technical magazines. The published literature so far has dealt mainly with the theoretical study of the raw materials, while the practical side has received very little attention. Theoretical information is of extreme importance, but its importance is negative until put to practical use. The brick manufacturer is not as a rule a man of theoretical training, hence theoretical investigations to be of use to him must be expressed in simple and explicit terms, easily understood. This does not however excuse the maker, who in most cases has been negligent in regard to investigations of the properties and improvement of his own product. The consumer has also been at fault in that he has not freely co-operated with the maker and informed him wherein the brick failed. To obtain the best result it is necessary that these three—the investigator, the maker, and the consumer—should work together with heartiest co-operation.

In the manufacture of iron and steel, silica brick find their greatest use in the open-hearth furnace. The demand here is for a brick of high refractoriness which does not become soft or plastic at working temperatures. The silica brick fulfills these requirements in that it is refractory and does not yield to compression unless the stress is sufficient to crush it. The ability of silica brick to stand when only a small portion of the original wall is left is well illustrated in the bulk-heads. This wall when built is eighteen inches thick, but wears away in spots to less than one inch in thickness and still the brick retains its place.

In the by-product coke industry the development of the use of silica brick is interesting. Formerly a quartzite brick was used which was made of a mixture of clay and ganister. The object of the quartzite brick was to overcome the shrinkage and settling common to fire brick. Some twelve years ago silica brick were used experimentally in both bee-hive and by-product ovens. The experiment proved so successful that their use increased rapidly; not only did their expansion on heating produce close, well-fitting joints and overcome settling difficulties, but their better conductivity greatly reduced the coking time. (Fig. 1.)

THE MANUFACTURE OF SILICA BRICK

In the manufacture of silica brick in this country the raw material used is quartzite rock commonly known as ganister. The important deposits are found in Huntingdon and Blair counties of Pennsylvania, Devil's Lake region of Wisconsin,

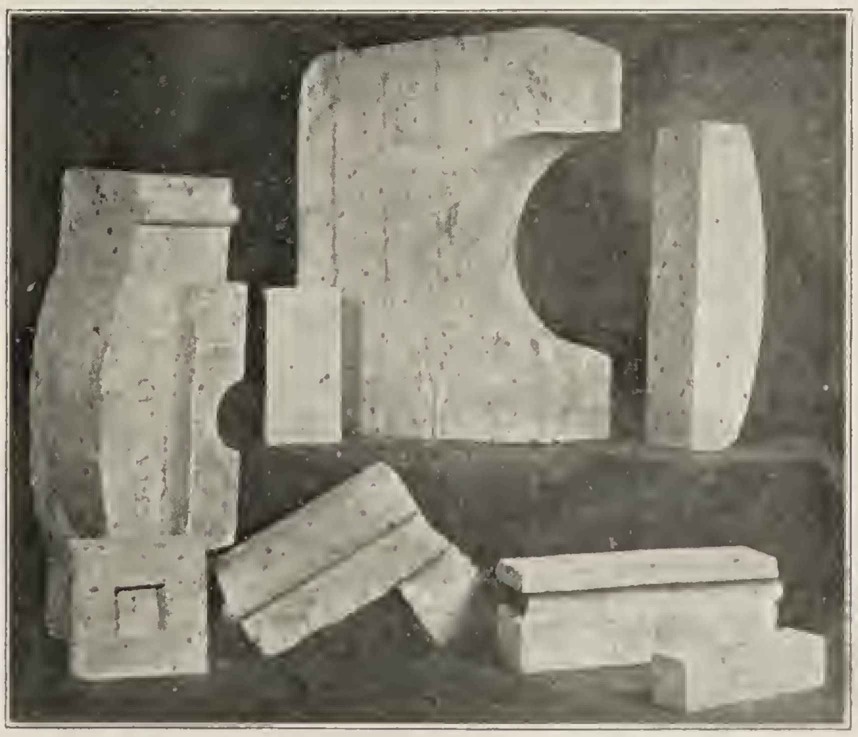


Fig. 1. A Few Difficult By-product Coke-Oven Shapes, Illustrating Shrinkage Cracks and Cracks Due to Re-entrant Angles. Note Nine-inch Brick in Center for Relative Size.

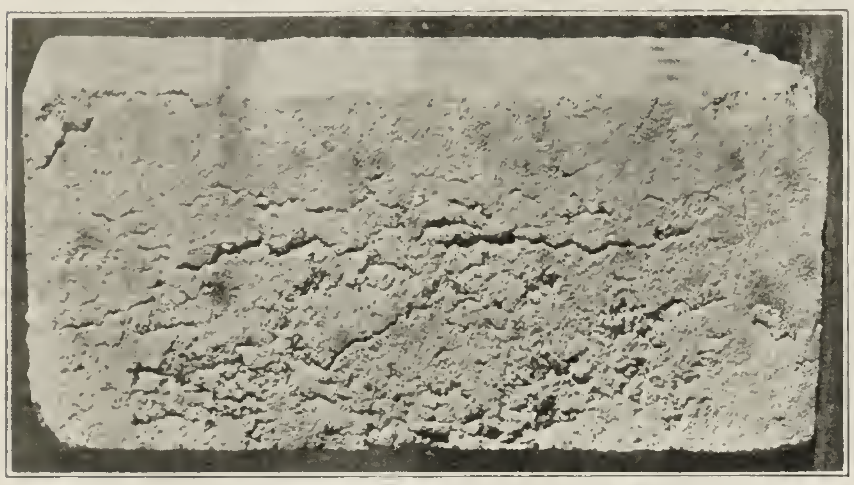


Fig. 2. A Few Difficult By-product Coke-Oven Shapes, Illus- Sponginess

and in Alabama and Colorado. It is essential for high-grade silica brick that the ganister be hard and dense. The rock should analyze about ninety-eight per cent. silica, with one per cent. each of iron and alumina. The raw material is broken to convenient size, dumped into a wet pan, and ground with water and lime. The degree of fineness and the amount of water is left to the judgment of the operator. This is a source of considerable variation, as it will be shown later that the degree of fineness has considerable influence on the strength of the finished brick.

The binder commonly used is lime. Two per cent. has been found to give the most satisfactory results. Percentages greater than this lower the refractoriness and decrease the strength of the brick, while percentages below 1½ per cent. do not give a satisfactory bond. Binders such as iron, alumina, talc, water glass, and other substances have been tried with more or less success.

The amount of water necessary to produce a satisfactory working mud varies somewhat with the kind of rock used, amount of calcined material present, and the method of manufacture. The percentage of moisture present is important. About ten per cent. of available moisture is the proper amount for hand-made brick. Too wet a mud will produce brick and shapes which distort after being taken from the mold, while too dry a mud is responsible for a number of very serious defects, such as unfilled corners, sponginess, improper slicking, and lack of cohesion, all of which tend to give a finished product of low mechanical strength, very susceptible to spall, and slag penetration. (Figs. 2 and 3.)

The molding is a very critical point in the manufacture of silica brick. Improper filling of the molds, too wet or too dry a mud, improper slicking, dirty palette boards, or careless handling, all contribute their share to the making of a defective product. The defects can largely be eliminated by close inspection and rejection of all but good brick. As an illustration, brick were received from a certain company which were poor in quality. The spalling loss was very high, running from fifty to sixty per cent. An investigation was made of the methods at the plant and irregularities of mixing, molding, and burning were found. Careful inspection was applied at certain points in the brick manufacture and today this same plant, with no radical change in its general method, is producing brick much more uniform in shape, strength, and appearance, and with a spalling loss of only twenty-five per cent.

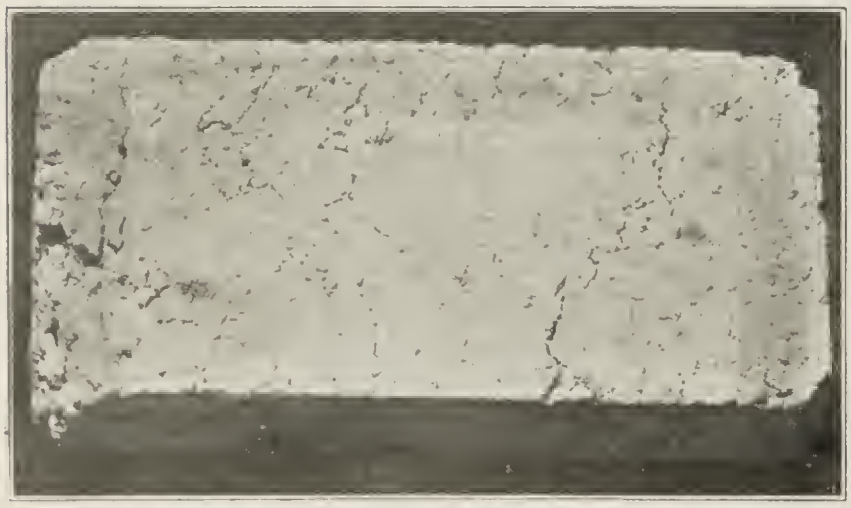


Fig. 3. An Example of Bad Molding and Fire Cracking

DRYING AND BURNING

Drying of the brick after molding is accomplished either on a hot floor, heated by steam, or in tunnels heated by hot air from the kilns. Drying on the floor is naturally the slower of the two methods, four to six days being required for nine-inch brick and proportionally longer for larger shapes, while drying in tunnels may be accomplished in eighteen to twenty-four hours. It is important that drying shall be done carefully and thoroly, for unless the material is bone dry when placed in the kilns, fire cracks are apt to result. (Fig. 4.)

The dried brick are set in kilns, which are usually of the down-draft type ranging in capacity from 50,000 to 150,000 brick. It is important in setting that the brick shall be true to shape in order that they have a proper bearing and stack well. Green brick will not sustain a load of much more than one hundred pounds per square inch, hence care should be taken not to overload them. Shapes should not be placed near fire boxes nor bear much weight. They are frequently boxed in.

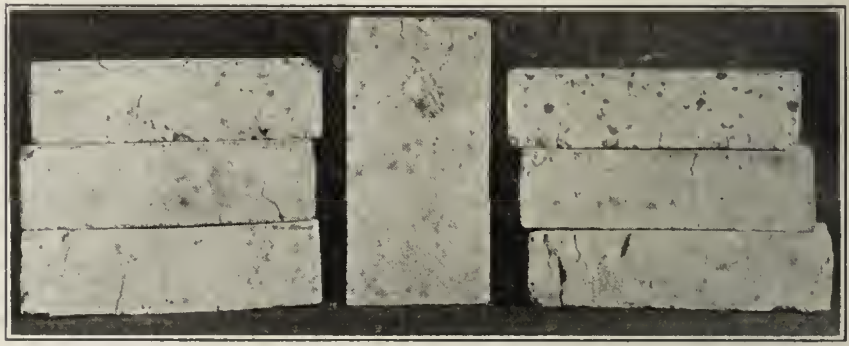


Fig. 4. Characteristic Fire Cracks

Complete burning requires from ten to fifteen days, with a gradual increase in temperature until at least cone sixteen is attained (1,450° C., or 2,642° F.). The final temperature must be held a sufficient length of time to thoroly and uniformly heat the entire kiln, which may require anywhere from one to three days, depending on the size of the kiln.

The cooling usually requires about five days and is accomplished by gradually opening the fire holes and doors until the brick are cool, when they are removed and placed directly on cars or in the stock house.

Table I.—Tests of Silica Brick, Arranged According to Pressures

Pressure under which Brick were made, lb. per sq. in.	Apparent Specific Gravity	Impact In	Percentage Spalled	Slage Penetration, sq. in.		Expansion, lin. in. per. ft.
				Open-hearth Slag	Heating-Furnace Slag	
187	1.50	47	45.5	3.48	2.28	0.155
500	1.58	46	48.3	3.68	2.42	0.155
750	1.59	60	53.2	3.63	2.41	0.158
1000	1.63	65	51.4	3.79	2.42	0.160
1250	1.65	68	47.9	3.65	2.50	0.155
1500	1.66	65	43.6	3.82	2.50	0.160
2000	1.67	67	44.8	3.64	2.45	0.159
2500	1.68	71	42.0	3.72	2.50	0.160

TESTS OF SILICA BRICK

With a view to studying the effect of degree of fineness of material and pressure, an experimental series of silica brick was made with these two factors as the only variables. A good quality of Pennsylvania ganister was selected and ground dry in three lots to pass a twelve, eight and four-mesh screen, respectively. To the ground material was then added the water and lime so as to give nine per cent. of moisture and two per cent. of lime. From each of the above meshes standard nine-inch brick were made on a small hydraulic press at eight different pressures varying from 187 to 2,500 pounds per square inch. The brick were dried, burned, and cooled, following regular silica-brick practice, and were then subjected to certain physical tests to determine density, resistance to impact, resistance to spall, resistance to corrosive action of slag, and expansion due to heating. A summary of the results is given in Table I, in which the results of the three meshes are averaged according to pressure.

Table II shows the results of the various pressures averaged according to mesh.

Table I indicates that little is gained by increasing the pressure. Table II, however, shows the importance of the selection of mesh. It will be observed that the strength as indicated by the impact test is greatest with the fine-ground material, while the percentage loss by spalling increases with fineness of mesh. Two very important properties in first-class silica brick are the mechanical strength and resistance to spalling; hence from the data we must select a mesh at the expense of one of these properties. More is gained by the coarse mesh, hence we advocate for silica brick a coarse-ground material. (Fig. 5.)

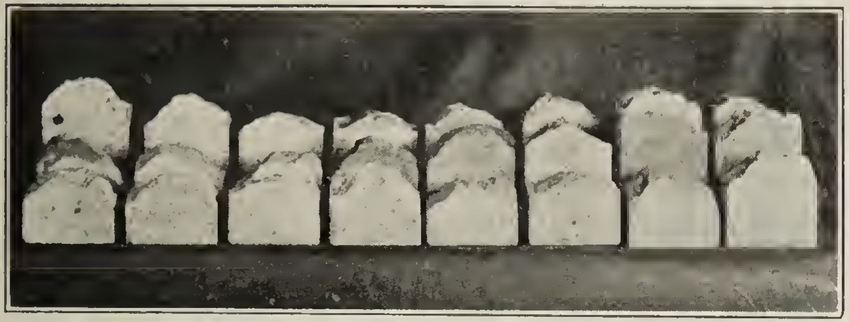


Fig. 5. Spalling Test On Experimental Series. Note Brick In Illustration Are Averaged with Pressure Increasing from Left to Right and Mesh Increasing from Front to Back. (Tables I and II Are Arranged in Corresponding Order)

Table II.—Tests of Silica Brick, Arranged According to Mesh

Mesh	Apparent Specific Gravity	Impact, in.	Percentage Spalled	Slag Penetration, sq. in. Open-hearth Slag	Slag Penetration, sq. in. Heating-Furnace Slag	Expansion, lin. in. per ft.
4	1.66	57	30.4	3.92	2.63	0.156
8	1.62	63	47.6	3.67	2.39	0.159
12	1.58	64	63.2	3.44	2.29	0.159

Table III gives the individual losses by spalling for each pressure and mesh.

Table III.—Losses by Spalling, Expressed as Percentage

Mesh	Pressure under which Brick were made, lb. per sq. in. 187	500	750	1000	1250	1500	2000	2500
4	21.9	34.9	37.9	38.7	31.4	30.4	19.1	29.1
8	51.6	45.9	62.6	51.0	43.3	34.8	38.3	43.3
12	62.9	64.0	59.2	64.4	69.1	65.8	67.0	53.6

The average spalling loss for hand-made silica brick is about thirty per cent. From Table III it will be noted that power-pressed silica brick were made with the same spalling loss from four-mesh material pressed at 1,500 pounds per square inch. These brick were true to shape, sharp-cornered, dense and had smooth, marble-like surfaces. Molding defects such as soft corners, sponginess, improper slicking, and lack of cohesion were all eliminated. The prospect of the adoption of power pressing as a step towards better and more uniform silica brick was clearly brought out by this series of tests. The idea of power pressing is not entirely new, yet little has been done in a commercial way. One of the large concerns is now manufacturing brick this way on a commercial basis. The average spalling loss of these brick is twenty-five per cent. (Fig. 6.)

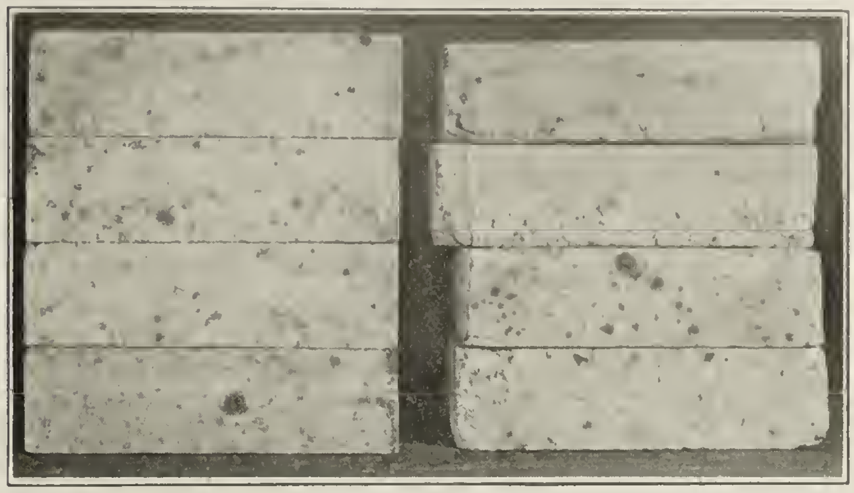


Fig. 6. Comparison of Hand-Made and Commercial Power-Made Brick. Note Joints

THREE PRIMARY CAUSES OF SILICA BRICK FAILURE

In actual service, altho well guarded as far as practice and construction will permit, silica brick fail from three primary causes: spalling, crushing and slagging. These cannot be entirely eliminated, but by a deeper study of the manufacturing of brick they can be reduced to a minimum. An ideal brick must be well molded, true to shape, thoroly bonded, and of good mechanical strength. (Fig. 7.)

A visual inspection of almost any shipment will show at least twenty per cent. of defective brick. Six shipments of brick of different brands brought out the fact that sixty per cent. of the defects were due to molding, thirty per cent. to fire cracks, and ten per cent. to improper setting and irregular shapes. These defects can be largely overcome in the present method of manufacture by careful inspection and rejection of the improperly made brick at certain points in the manufacture.

The ganister must be carefully selected, and sorted; all rock that is soft or which carries considerable iron, clay, sandstone, or other foreign matter should be rejected. (Fig. 8.) The ganister selected should be ground to just pass a

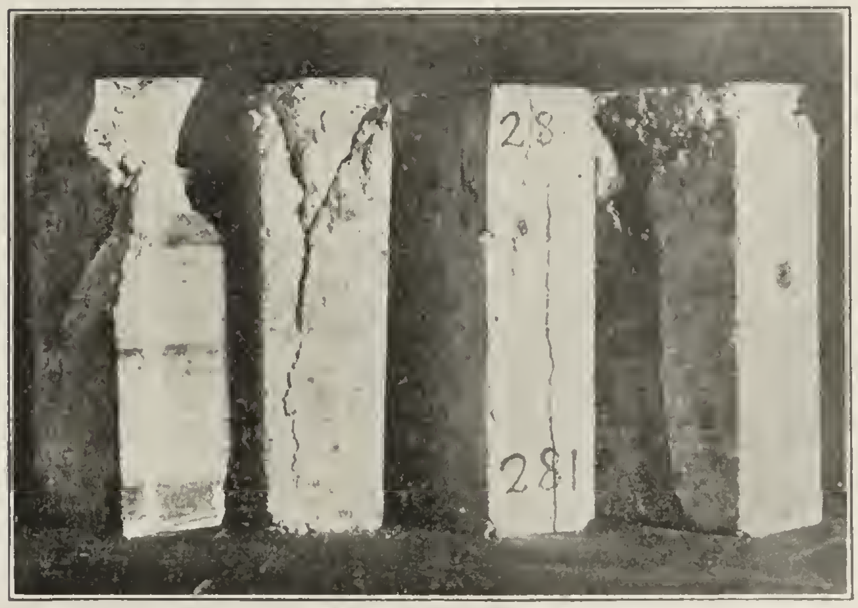


Fig. 7. Characteristic Crushing Tests

four-mesh screen, care being taken to avoid an excessive amount of finely ground material. To insure uniformity, frequent sieve tests of the mud should be made. To secure a sufficient bond, 1.75 to two per cent. of lime should be used. In order to avoid irregular shapes and molding defects, nine to eleven per cent. of water should be used for hand-made brick and the material should be pounded into the mold. The brick should be thoroly dried so as to avoid fire cracks when placed in the kiln. Great care should be used when heating, especially during the first part of the burn, to prevent fire cracking; this applies also to the cooling. The brick as they are removed from the kiln should be carefully inspected and all brick showing molding defects, fire cracks, and irregular shapes should be rejected.

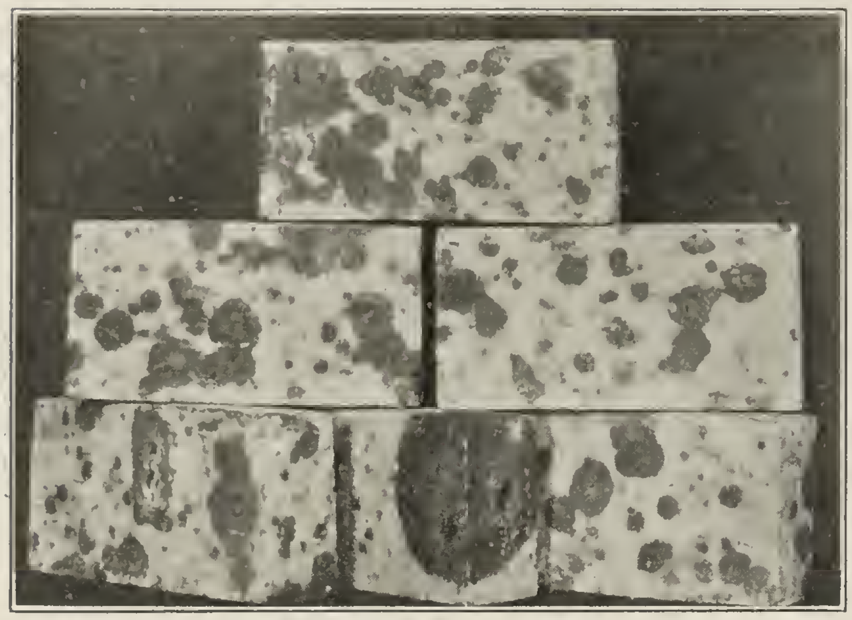


Fig. 8. Defects Due to Iron in Raw Materials

The consumer should be allowed to inspect the brick before they are loaded on the car and a place provided for storage of such brick as he may desire to test.

******

Editor's Note: An appendix is included in the bulletin issued by the American Society for Testing Materials, containing this paper, which outlines in detail the methods followed in testing the samples of silica brick. Inasmuch as there has been no change in the description of the tests outlined in the appendix from those which were fully described in the August 15, 1916, issue of "Brick and Clay Record," in connection with the article on "Practical Methods of Testing Fire Brick," also written by Messrs. Nesbitt and Bell, this appendix is not reprinted here. If need is found for information regarding the methods employed in making the tests, our readers are referred to the issue noted above.

POTTERY GAINS THIRTY PER CENT. *in* 1916

THE POTTERY INDUSTRY showed a large gain in 1916 compared with 1915, the output of the potteries of the United States being valued at $48,217,242, an increase of $10,891,854, or nearly thirty per cent., according to a report soon to be issued by the United States Geological Survey, Department of the Interior. This value is the largest yet recorded, being $10,224,867 greater than that of 1913, the preceding year of greatest value.

In 1916 every variety of pottery as classified by the Geological Survey increased in value compared with 1915. Sanitary ware showed the largest increase—$3,118,201. Chinaware, which showed a small decrease in 1915, rallied and showed a large increase in 1916—$1,148,216, or near fifty per cent.

The value of white ware, including china, which comprises the general household wares and constitutes nearly fifty per cent. of all pottery products, was $21,669,762 in 1916, an increase of $4,015,364 over 1915. If to this sum is added the value of sanitary ware and porcelain electrical supplies—high-grade products—the total value in 1916 was $39,815,599, or $9,496,783 more than in 1915.

For the first time separate figures showing the value of chemical pottery were collected. This ware was reported by sixteen producers in eight states and was valued at $1,054,061. Ohio was the leading state, reporting ware valued at $486,171.

Tho the large increase in the value of the higher grades of pottery was due, at least in part, to the increase in the selling price at the works, caused by the increased cost of raw material and labor, yet the volume of business was probably the largest ever done by American potters, notwithstanding the adverse conditions of labor and transportation, which materially lessened the output and delivery of wares.

Pottery was made in thirty-seven states in 1916, the value of the wares ranging from $19,441,533 in Ohio to a few hundred dollars in Porto Rico Ohio's pottery products in 1916 increased in value $3,511,754 over 1915, and constituted forty per cent. of the value of the output of the entire country. Ohio makes every kind of pottery classified in the Survey's report, except china. Its principal product is whiteware, the output of which in 1916 was valued at $11,834,913, or sixty-one per cent. of the value of the state's entire pottery output and nearly two-thirds of the value of the ouput of whiteware in the entire country. New Jersey is the second largest pottery-producing state, its pottery wares marketed in 1916 being valued at $11,064,878, and constituted twenty-three per cent. of the value of the product of the entire country. This was an increase of $3,015,540 over 1915. New Jersey makes every kind of pottery classified in the report of the Survey. Its principal pottery product is sanitary ware, the output of which in 1916, valued at $6,458,356, was fifty-eight per cent. of its pottery output, and the state produced the same percentage of the value of sanitary ware for the entire country. New Jersey is the principal producer of china, but is closely followed by New York.

West Virginia is the third in rank among the pottery-producing states in 1916, its marketed pottery wares in that year being valued at $5,780,853, an increase of $1,270,230 over 1915. Its principal product is whiteware, valued at $3,576,510.

The value of imports of pottery was $5,600,585, a decrease of $1,027,501 from 1915. The value of the exports in 1916 was approximately $1,076,572, an increase of $513,120, or more than ninety per cent. over 1915. The imports consist almost entirely of high-grade ware, ninety-five per cent. of the value for 1916 being of that kind.

The value of the pottery imported into the United States in 1916 added to that of the pottery produced makes a total of $53,817,827. After deducting from this sum the value of the exports of domestic ware, $1,076,572, and of the re-exports of foreign ware, $81,223, the value of the apparent net consumption is $52,660,032, of which the domestic production was ninety-two per cent., by far the highest proportion yet reached.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

Setting Forth the Importance of Rate Knowledge and the Governmental Machinery for Transportation Regulation

By Sydney A. Hale

The first article in this series dealt with the importance of rate knowledge and the governmental machinery for transportation regulation. This article covers the nature of rates in general and the legal standards which charges must meet.

TO AFFORD an effective means for redressing wrongs resulting from unjust discrimination and undue preference was among the principal purposes of the Act to Regulate Commerce, and the means by which these purposes were to be accomplished was the placing upon all carriers the positive duty of establishing schedules of reasonable rates which would have uniform application to all and which should not be departed from so long as the established schedules remained unaltered in the manner provided by law.—Texas & Pacific Ry. Co. v. Abilene Cotton Oil Co., 204 U. S., 426.

TRANSPORTATION THE RAILROAD STOCK IN TRADE

Altho it is customary to consider railroads as a thing apart from ordinary commercial enterprises, they have much in common with the average business. Like every other business, the railroad corporation is engaged in buying and selling. Where the farmer sells his crops, the miller his flour, the manufacturer his finished articles, the railroad commodity of sale is transportation service. The Standard Dictionary defines "transportation" as the "carriage of persons or commodities from one place to another," but the interstate commerce law gives a much broader meaning to the term. According to that definition, "transportation" includes, not only the carriage of persons or commodities from one place to another, but "all services in connection with the receipt, delivery, elevation and transfer in transit, ventilation, refrigeration or icing, storage and handling of property transported."

For the commodity it sells, the railroad must receive its compensation in cash. Exchange of services is not recognized as payment. This does not necessarily mean, however, that certain of the services included under the broad term "transportation" may not be rendered without specific compensation when such services are incidental to other features of transportation, altho the tendency in regulatory practice is to frown upon anything that smacks of gratuitous service.

RAILROAD RATES MUST BE OPEN TO ALL

Except as such variation may create unfair competition, theorctically at least there is no bar in private enterprises to the maintenance of different prices upon the same article sold in identical quantities to different buyers. The opposite is true with respect to railroad rates. Means of transportation being a necessity to the commerce of the country and the shipper not always being privileged, as are the buyers of many other commodities, to take or leave, common carriers are bound by law to maintain but one price for a certain service. They are further prevented from changing that price except upon due notice—usually thirty days—and their schedules of rates and regulations, called tariffs, must be filed with the Commission and must be open to general public inspection at the stations where they apply.

Competition, the great regulator in ordinary business, is also a potent force in holding down the level of transportation rates, but, because of the quasi-public character of the common carrier, the measure of its charges are subject to certain general restrictions imposed by law. In the first place, the interstate commerce act prescribes that all charges must be just and reasonable. The question of what is a reasonable rate is one of fact to be determined by the special circumstances surrounding that particular charge. There is no mathematical yard-stick by which an individual rate can be measured.

The usual test of the reasonableness of a particular rate is by comparisons with rates on the same article for similar distances in other parts of the country, with rates on articles that are similar in construction and value and that compete with the article the rate on which is under attack, with earnings received under the rate in question and earnings received on all traffic. Contrary to a somewhat popular belief, the prosperity of the shipper or of the railroad is not determinative of the reasonableness of an individual rate. The fact that a charge has been in effect for a number of years and that commerce has been built up under it is of great weight, but not conclusive.

What is a reasonable rate in the abstract has been explained by E. P. Ripley, president, Atchison, Topeka & Santa Fe Railway, in the following language:

DEFINITION OF A REASONABLE RATE

"First and foremost there has never been any better definition of a reasonable rate than that which was given many years ago by somebody and which has been used as a by-word and a reproach ever since, namely, 'what the traffic will bear.' This does not mean all the traffic will bear; it does not mean all that can be extorted or squeezed out of it, but what the traffic will bear having due regard to the freest possible movement of commodities, the least possible burden on the producer and on the consumer."

Rates, however, must be something more than reasonable. An adjustment, to meet the test of a lawful rate, must not only be just and reasonable, but it must neither unduly discriminate against nor unduly favor any particu-

(*Continued on Page* 150.)

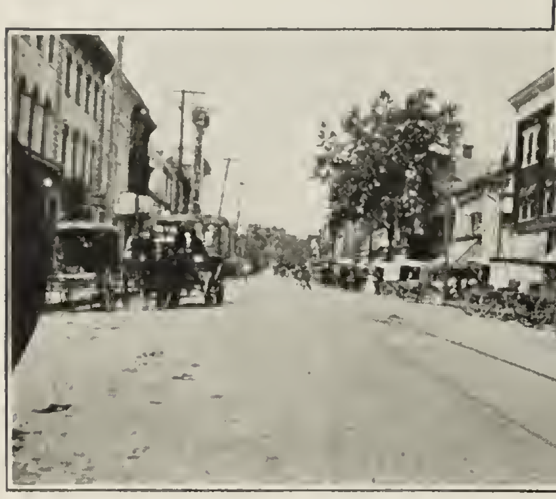


Fig. 1, Shown Below, Illustrates Twenty-Six-Year-Old Brick Pavement, In Sunbury, Pa., Laid on Natural Soil With Tar Pitch Filler.

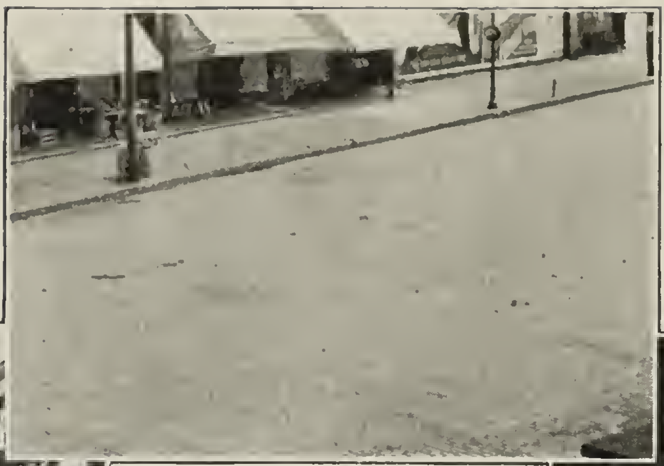


Fig. 2, Above, Shows Brick Pavement Laid in 1898 on Eight-Inch Gravel Foundation. The Joints of This Pavement Were Filled With Paving Pitch.

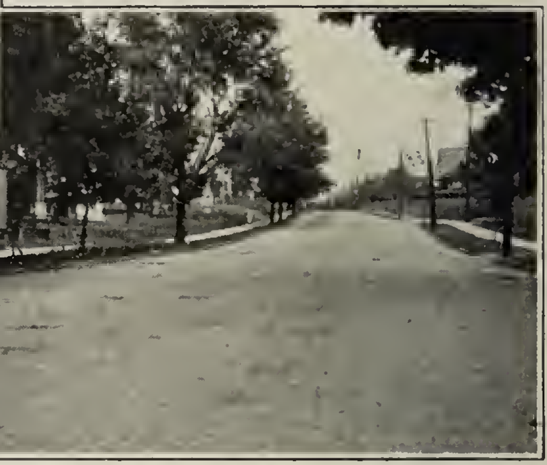


Fig. 3, Another Brick Pavement Laid in 1898 on Eight-Inch Gravel Foundation, In Coshocton, Ohio, and Still in Good Condition.

RECENT DEVELOPMENTS *in* FOUNDATIONS *and* FILLERS *for* BRICK PAVEMENTS

Rapidly Increasing Prices Threaten to Dethrone Cement in Favor of Coal Tar Products as Filler and Base

By John S. Crandell, B. S., C. E.

Formerly Professor of Highway Engineering at Pennsylvania State College.

WHEN BRICK WAS FIRST USED to pave the traveled way it was laid on the compacted surface of the ground and the joints were filled with sand. These pavements gave excellent satisfaction when the traffic was light. Many of the old brick paved streets and highways in Holland exist today, and are in fairly good condition, considering the foundation on which they were laid, and the length of their existence. However, under modern traffic conditions, these self same highways would not last more than a few hours.

A foundation for any type of pavement should distribute the traffic load over a wide area. A sand foundation obviously fails to do this. In some instances in the early days of brick pavements gravel was used as the foundation material, and sometimes broken stone or macadam base was supplied. When properly constructed, these foundations have proved adequate and have enabled the brick surface to carry a considerable amount of traffic. Where the sub-soil is of sufficiently rigid character, it is found possible to pave with brick bedded in a one-inch sand cushion. But it is essential that the joints be made water-proof in order to prevent the sand cushion and the earth foundation from becoming soft, which would ultimately ruin the pavement.

BRICK ROAD ACCOMPLISHMENTS TOLD IN PICTURES

Fig. 1 is a picture of Mail Street, Sunbury, Pa., the pavement on which at the present time is twenty-six years old and is in excellent condition. This pavement was laid on a sand cushion over the natural soil and the joints of the brick were filled with coal tar paving pitch. This street, as may be seen from the illustration, carries a great deal of traffic. Fig. 2 shows a brick pavement laid in 1898 on an eight-inch gravel foundation. The joints were filled with coal tar paving pitch, and today the pavement is in very good condition. Fig. 3 shows another brick pavement laid on an eight-inch gravel foundation in the same town, Coshocton, Ohio, and the same year, 1898. This pavement is also in splendid condition, and is on a three per cent grade. Fig. 4 is a twenty-year-old brick pavement on Wisconsin Street, Milwaukee, Wis., in front of the North Western Railroad station. It is in very good condition; the joints were filled with coal tar paving pitch.

These pictures show what is possible with a brick pavement, carefully laid on a properly prepared earth or a gravel foundation, and when the joints have been waterproofed with a suitable material.

Heavy modern motor traffic demands a more rigid base: one which, as has been said, will distribute the load evenly over the sub-base. Old macadam pavements have proved themselves to be very good foundations, but lack one essential: they are not water-proof, hence they are apt to be affected by frost action. If such a foundation were water-proof it would be an admirable base for a brick pavement; one capable of carrying any kind of traffic from light pleasure vehicles to heavy motor trucks and trailers. It would seem therefore, that a bituminous macadam of the penetration type would be admirably suited for this work. One of the most successful brick pavements in the country is Indianapolis Speedway, which was laid on a bituminous macadam.

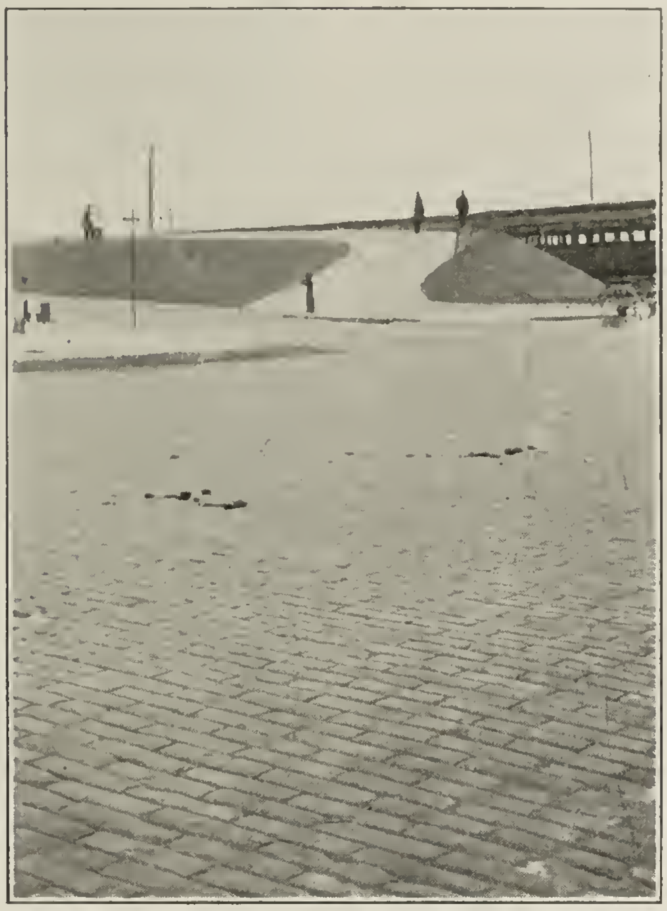


Fig. 4. A Twenty-Year-Old Brick Pavement in Front of the Northwestern Railroad Station, at Milwaukee, Wis.

At the present time concrete foundations have proved themselves to be well adapted to carrying the heavy loads over our streets, but with the rise in the price of cement, brick pavements with concrete bases will soon be luxuries.

ADVANTAGES OF BITUMINOUS MACADAM FOUNDATIONS

Bituminous macadam foundations have a number of advantages, among which are ease and rapidity of construction; no waiting for the foundations to cure, as the brick may be laid on the bituminous macadam as soon as it has been rolled; facilities for making cuts in the pavement to gain access to underground structures; ease and rapidity of repairing such cuts with a minimum loss of time and inconvenience to traffic; absolute water-proofing of foundations, and hence, freedom from frost action; quietness, due to the insulating effect against noise of a tar macadam; resilience, which makes for easier riding qualities and which reduces wear on the brick surface; and, lastly, cheapness, without any sacrifice of good workmanship.

Probably the least expensive and most satisfactory form of bituminous foundation is that built by the penetration method, using refined coal tar for binder. Briefly, the method of construction is as follows: Thoroly drain the sub-soil with either longitudinal, cross or V-shaped drains, and compact with a ten to fifteen-ton roller to the required cross section. Upon this rolled earth base place from four to eight inches of three and one-half inch broken stone, filling the interstices with sand or other suitable fine material, and then roll thoroly. The depth of this course will vary with the character of the soil on which it is placed. If the soil is firm and well drained, the minimum depth may be specified, while with less stable soil a deeper course is necessary.

On this filled foundation course place three inches of two and one-half inch to one and one-half inch stone and compact to two and one-half inches; roll to the required cross section. Refined coal tar of a suitable consistency heated to a temperature of not less than 200° F. and not more than 275° F. is then spread uniformly over the surface when dry to the amount of not less than one and seven-tenth gallons nor more than one and eight-tenth gallons to the square yard. The upper course is then filled with sand or screenings and rolled until firm. A one-half inch sand cushion may be left on top in which to bed the bricks. The bricks are then laid, following the specifications of the National Paving Brick Manufacturers' Association, and the joints are filled with coal tar paving pitch.

APPLYING COAL TAR PAVING PITCH

The paving pitch may be applied as a plain pitch filler, such as has been used for many years, or the most recent development in fillers, known as pitch sand mastic filler, may be used. In the former case, a pitch of about 135° melting point should be specified.

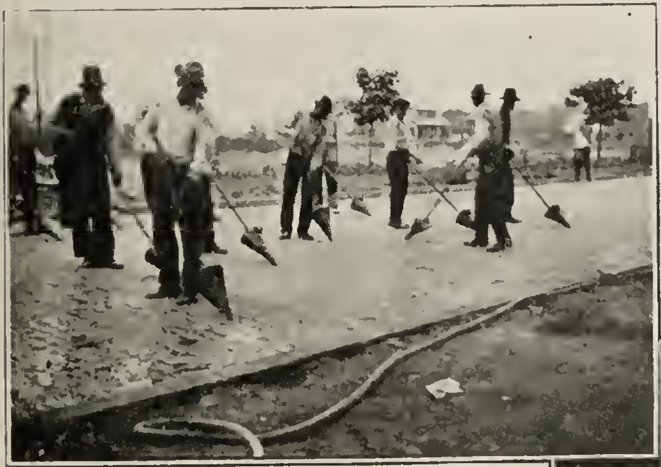


Fig. 5. The Usual Method of Filling Joints of a Brick Pavement With Pitch. The Pitch Flows Out of Cone-Shaped Cans Into the Joints.

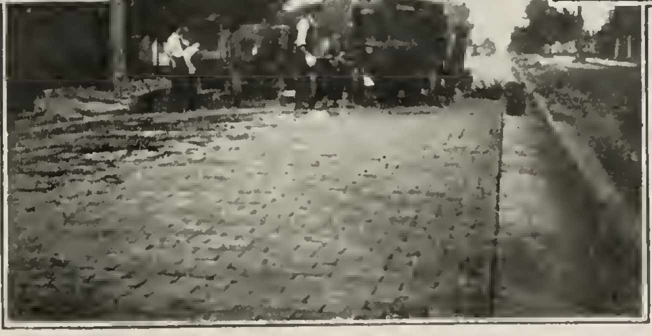


Fig. 7. A Sand Heater and Tar Kettle Advantageously Placed as Close as Possible to the Point of Application of the Filler.

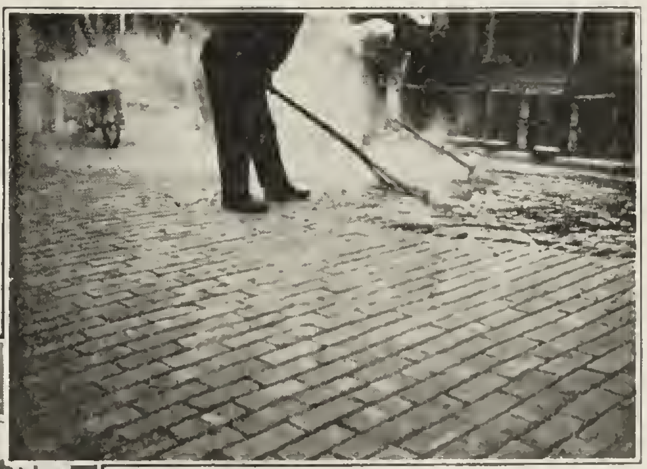


Fig. 6. A Cheaper and Quicker Method of Filling the Joints Is by Working the Pitch Into the Joints While Hot, With Squeegees.

Fig. 5 shows the usual method of filling joints of a brick pavement with pitch. The heated material is poured into cone shaped cans, which have a small opening at the bottom to permit the pitch to flow out and into the joints. A plunger keeps the orifice open. This method, as may be seen in the illustration, requires the services of a large number of men. A quicker, cheaper and better method is that shown in Fig. 6, where the pitch is poured onto the surface and worked into the joints while hot, with squeegees. A gang of five men will fill as many square yards in a day as fifteen working with pouring cans.

Pitch sand mastic filler is a combination of fifty per cent of coal tar paving pitch and fifty per cent fine sand, by volume. The pitch and the sand are heated separately and when they are at about 300° F. they are mixed, and the resulting mastic is introduced into the joints of the pavement either by pouring from wide nosed cans, or by dumping the mix onto the brick and working the mastic into the joints by means of squeegees.

Fig. 7 shows a tar kettle for heating pitch, and a heater for heating the sand. It will be noted that these are placed close together, as they should be, and that they are both as close as possible to the point of application of the filler. Too many contractors fail to keep this in mind and are apt to scatter their equipment over the street in such a way that profits are eaten up due to unnecessary operations of the laborers. In one extreme case the kettle and heater were a thousand feet apart, and a thousand feet from the place the filler was to be applied. In order to dump one wheelbarrow load of the mixture and return to the starting point, a man had to walk four-fifths of a mile. Under these circumstances a gang of twenty men filled 268 square yards in a day of nine hours. By properly arranging the equipment and placing it in a manner similar to that in Fig. 7 it was found that nine men were able to lay 1,400 square yards in the same time. This is not scientific management; it is just common sense.

PAVEMENT MAY BE USED IMMEDIATELY

Figure 6 also shows the wheelbarrow in which the pitch and sand are mixed, and men working the mastic into the joints with iron squeegees. Fig. 8 is interesting, as it shows that the newly filled pavement may be immediately used, and hence the public is not inconvenienced by having the street closed to traffic during the period of time usually allowed for cement grout to set. The minimum time recommended by the National Paving Brick Manufacturers' Association during which traffic should be kept off the street is eight days. The time necessary to keep traffic off the street when pitch-sand mastic is used is about fifteen minutes.

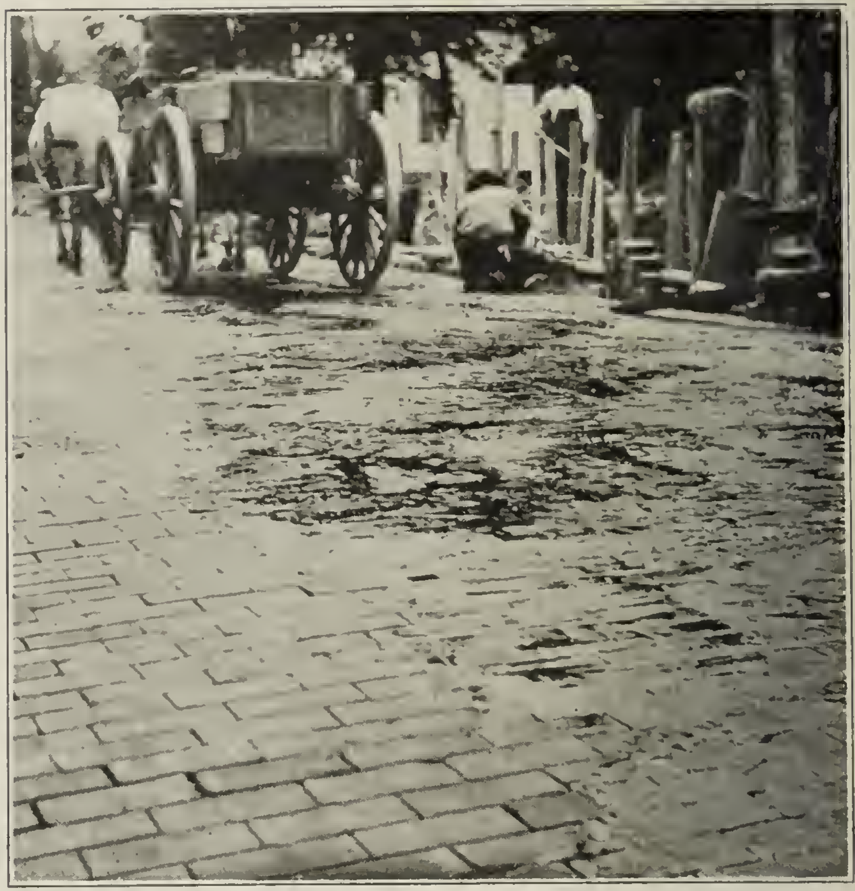


Fig. 8. The Time Necessary to Keep Traffic Off the Street When a Pitch-Sand Mastic is Used is Fifteen Minutes

The many advantages that the form of construction given above has, coupled with the present high price of cement, should go far toward ushering in a new era in the building of brick roads thruout the country. The method is not a new one, but has been used time and again when brick has been laid over old bituminous bound roads, and always with happy results.

◆ ◆ ◆

BRICK ROADS *for* ARMY CANTONMENTS?

In the absence of any definite specifications bids are being submitted for brick roadways in all military cantonments announced by the war department, according to Will P. Blair. Whether the quartermasters in charge of construction at the several cantonments will use this type of roadway is not known at present, but care is being taken to point out the disadvantages which have been experienced at military camps in the past from unpaved roadways.

"Roads and walks in permanent camps in the past have been great sources of discomfort, ill health, and the great bane of military life," said Mr. Blair. "It's mud and mire in winter and dust in summer. Those who know of the relief in these respects that will be experienced in the use of paving brick for roads entertain great hope that the government will take advantage of what is being offered them, and thus avoid repeating the history of the past. As the equipment and the medical facilities of our army today are the result of profiting by past disasters, so let these new camps be healthy, comfortable, and sanitary. The discipline of the army requires that unnecessary discomforts be not forced upon the men, except as a military necessity."

* * *

V. H. Cartwright with New Company

V. H. Cartwright, formerly assistant general manager of the Murphysboro (Ill.) Paving Brick Co., and previous to that general manager of a large dry-press brick plant in Cedar Rapids, Iowa, is now general manager of the Lacon (Ill.) Clay & Coal Co., a new concern incorporated with a capital stock of $100,000. The company will soon start work on the construction of a large face brick and hollow ware plant to be located at Sparland, Ill., the plans for which were drawn by Mr. Cartwright, which will have a daily capacity of 100 tons of ware. The Lacon company owns 300 acres of shale land, and has a two-mile river front. Coal for use in the company's kilns and for sales purposes will be mined from the company's own property.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Choosing the Site for New Kilns

The choice of the site for new kilns is something to consider carefully before building. There are at least three important factors which should govern their proper location.

First, we, of course, must have our kilns situated so as to be convenient to the rest of the plant. Their position should be such that the least amount of travel is required for the dryer cars, from the dryer to the kilns, and for the wheelbarrows, from the kilns to the loading track or storage shed. Each foot of extra travel required per kiln means an enormous amount of extra work.

An idea of the magnitude of this surplus work can be conceived when considering the emptying of a kiln which has a capacity of 75,000 brick. Assuming that a wheeler is doing work equivalent to about 30 foot-pounds in wheeling a load of 100 brick, when an extra distance of 10 foot-pounds is wheeled he would be doing 300 foot-pounds of extra work. If it took three seconds to do this extra wheeling it would be equivalent to about 900 foot-pounds of work per second, or 1.64 horsepower. For emptying the complete kiln the amount of excess work would be equivalent to 1,230 horsepower.

The time factor also enters in this point. It does not appear to amount to much at first glance to have to go a few steps farther to a kiln, but when you consider that in one setting of the kiln there are about 150 cars of brick which must be moved an extra distance you can readily realize that the time consumed is considerable. Assuming that a kiln is situated so that it requires about ten feet more travel both to load and to unload the kiln, due to improper spacing, and that it requires on an average of three seconds to move a dryer car of green brick or a wheelbarrow load of burned brick over this space, it would require about 7.5 minutes extra time to load the kiln and 41 minutes extra time to unload it.

A second consideration is that of drainage. Wet kiln bottoms are a constant source of trouble on a good many plants. After a kiln is once built it is generally a very hard matter to correct a defect, such as poor drainage. If a plant is located alongside a hill care must be taken not to place the kilns too near the base of the hill, since if this is done, a heavy rain will do much damage. To place the kilns too near the bank of a stream will often cause trouble, due to the fact that water from the run-off of the neighboring valley seeps thru the earth not a great distance from the surface.

In many cases it is a good plan to place drain tile under a kiln at a distance of not greater than six feet below the floor. The spacing of the strings of tile will vary according to the dampness of the ground. An average spacing would be about two feet from center to center of tile. A ring of tile should also be placed around the foundation of the kiln wall to take care of the water which runs off the crown of the kiln during a rain.

In a few cases it has been found advisable to lay a slab of concrete under the kiln about six feet beneath the floor, to prevent the moisture from coming up thru the kiln and spoiling the ware. However, this scheme has been found to be only partially successful.

Good drainage for the whole brick yard is, of course, of great value, and should be absolutely essential on every plant.

The third point goes hand in hand with the second in many instances. The mistakes made in regard to the kind of earth the kilns were built upon have been numerous. A very dense, plastic clay will hold water in considerable quantities and for a long period of time, hence when building on a soil of this type one must know whether there is much moisture in the ground at all times or not. A wet clay of this type is also likely to be very slippery, and there exists the possibility of a kiln foundation slipping or sinking. A sandy soil, on the other hand, is very porous and allows water to flow thru it very freely. Thus, during a heavy rain, if the yard is not paved and the kiln not drained the water will be absorbed by the kiln bottom and give trouble in burning the ware.

Above all, be careful of a foundation consisting of cinders or ashes. A certain plant in Pennsylvania was obliged to build their kilns upon cinders and ashes, and when they made their first burn they found that the cinder foundation took fire, raising the heat in the kiln to such an extent that the burn became uncontrollable. Upon emptying the kiln the floor was found to be damaged so badly that it had to be rebuilt. They at once set at work tearing up the floor and the earth beneath it, and put in an entirely new foundation. This, of course, was very expensive, and the experiment was tried at an enormous cost.

* * *

Simple Explanation of Oxidation Reactions

One of the most important stages of burning is the oxidation period. There is no rigid line of demarcation between the dehydration stage, which precedes the oxidation period, or the hardening period, which follows it. On the other hand, these periods overlap considerably. Altho called the oxidation period, it is not confined strictly to the oxidation of iron and organic carbon, but includes the decomposition of the other minerals present. It is in other words, a period of driving out of the clay all of the gases which are liable to be evolved, and this should be done before proceeding with the burning. The temperature range in which oxidation takes place varies with the clay. Those clays which are nearly pure and have no foreign minerals present, but contain organic matter are oxidized at low temperature. On the other hand, those clays of high foreign mineral content and organic matter have to be oxidized during a wide temperature range.

Each mineral has its own properties of oxidation. Organic matter, which is nothing more than decayed particles of wood, brush, etc., or roots of plants, contains considerable carbon, hydrogen and oxygen. Upon reaching a certain temperature this organic matter is decomposed into gases which are liberated and pass out of the kiln along with the other gases. The tempera-

Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited

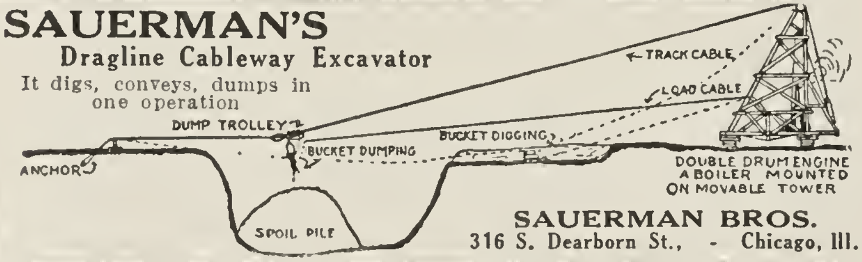
CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo, Michigan, U. S. A.

This Is the Way Your Bearings Look
To secure it you simply place a graphite sheet between the mandrel and the bearing box and pour in the babbitt. The result is a babbitt bearing impregnated with graphite spots. These bearings last from two to ten times as long on severe work.
Randall Graphite Sheet Lubricator Co., 816 W. Lake St., Chicago, Ill.

UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket
Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used. Sprockets, Buckets, Elevators, etc.—Send for Catalog
"The Chain of Double Life"
THE UNION CHAIN & MFG. CO., SEVILLE, OHIO

DO YOU NEED MONEY?
We Specialize in Bonds on Clay Properties.
We Arrange for Their Issuance and Sale.
We have rendered aid to many clay product manufacturers desiring to expand and improve their properties.
Write Us—Perhaps We Can Help You
F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILL.

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.

"SCANDINAVIA"
(Solid Woven Cotton Belt)
TRULY THE BRICKMAN'S BEST BELT
Scandinavia Belting Co.
106-108 Reade Street, New York
Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.
Canada: Federal Engineering Co., Limited, Toronto and Montreal.

BRICKMAKERS' HEADQUARTERS
FOR GREASES AND OILS
A special brand for each requirement of every kind and size of machine. Also Belt Dressing and Boiler Compounds. Write for catalogue and prices.
G. B. STOCK XYLITE GREASE & OIL CO., Port Huron, Mich., U. S. A.

ture at which this occurs is not a definite one, but lies in the neighborhood of 750 degrees Fahr. The transformation which takes place in this case is the combination of the carbon present with oxygen forming the gas, carbon dioxide. In this manner practically all the solid matter is changed into gases which pass out of the kiln.

Iron carbonate must be dissociated into iron oxide and carbon dioxide. In this reaction the temperature required is between 750 and 930 degrees Fahr. The reaction which takes place here is that the iron carbonate breaks up into iron oxide and carbon dioxide. The latter substance then passes out of the kiln in its gaseous form and the iron oxide remains as a solid in the clay mass.

Iron pyrite, which is a sulphur compound of iron whose formula is represented by FeS_2, dissociates at about 750 degrees Fahr. into a lower sulphur compound of iron. This reaction is represented by the following chemical equation:

$$FeS_2+O_2+\text{heat}=FeS+SO_2$$

The SO_2 is of course a gas and passes off along with other gases.

Later in burning at a temperature of about 1,650 degrees Fahr. the other atom of sulphur is separated from the iron and more sulphur dioxide is formed, leaving the iron in the form of an oxide. This reaction may be represented by the following chemical equation:

$$4FeS+7O_2+\text{heat}=2Fe_2O_3+4SO_2$$

Many minerals have some water in combination with them. This water is chemically combined and hence cannot be driven off as water is driven off upon evaporation. The process of driving this water off is called dehydration. This takes place in those minerals occuring in clay at a temperature near 1,300 degrees Fahr.

A very common mineral occuring in clay is limestone or lime carbonate. This is broken up by heat into lime and carbon dioxide. The temperature at which this dissociation takes place is between 1,380 and 1,650 degrees Fahr. Lime has a great affinity for water or sulphates and hence, if very much is present in the clay it will hydrate after cooling, that is, combine with water and cause the ware to spall, or, it will combine with any sulphur present forming a sulphate of calcium, which is the common trouble-maker, scum.

Magnesium carbonate is also very often present in a clay and will dissociate under certain heat treatment to magnesium oxide and carbon dioxide. The temperature at which this change generally takes place is between 750 and 1,100 degrees Fahr.

⁂

Coining Old Molds Into Dollars

In a recent issue, our English contemporary, "The Brick & Pottery Trades Journal," prints an item about the utilization of old and broken pottery and terra cotta molds which may be of interest to those of our readers manufacturing these products. According to this paper:

Many attempts have been made to rejuvenate the plaster in old and broken molds by reburning it, but the presence of salts, which are abstracted from the clay when the molds are in use, has a deleterious effect on the setting properties of the reburned plaster and makes it almost useless. These salts are held so tenaciously that it has not yet been found possible to remove them on a commercial scale.

There is, however, one use for these old molds which

has never received the attention it deserves, namely, as a fertilizer. The use of gypsum for this purpose dates back to 1700, but its value has never been properly appreciated because the firms who were compelled to get rid of basic slag and other waste products of manufacture have pushed their special products, and have largely succeeded in "shouting down" the rest. Nevertheless, ground gypsum and old molds ground down to a moderately fine powder make an excellent fertilizer and supply lime in a peculiarly solvent form to the soil. It is particularly suitable for leguminous plants, such as peas, beans, vetch, lentils, etc., and as it is not difficult to grind, enterprising potters might do worse than grind a few tons and push these in their own locality.

An analysis of a large number of plants shows quite clearly that they contain both sulphates and lime, and that they can assimilate old plaster readily and in a satisfactory manner.

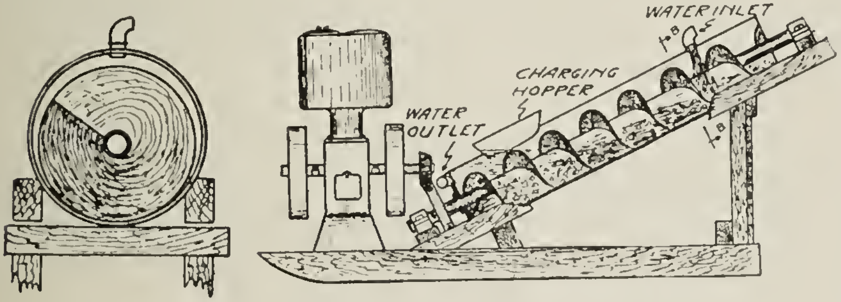
In other countries the use of waste plaster as a fertilizer has long been recognized, and its neglect in this country (England) is largely due to ignorance of its value, and the fact that it has not been placed on the market in a suitable form. There is clearly a good opening in this direction, but the trade will be largely local, as the cost of carriage is always a serious item on fertilizers.

* * *

A Simple Sand and Gravel Washing Device

Brick and Clay Record has in the past received a great many inquiries asking for information regarding a simple and economical method of washing molding sand, purging it of those impurities which otherwise would make it impossible to use in the manufacture of brick. In the May 2, 1916, issue a low-cost device for washing sand was described and illustrated.

Another device which can be used for this purpose appeared in a recent issue of "Concrete" and is shown in the accompanying illustration. The device as it is shown is designed for washing gravel, but can, with a few minor alterations to suit the changed conditions, be used successfully for washing sand.



Device for Washing Sand or Gravel

The device is merely a screw conveyor set into a pipe. The manufacturer may use his own judgment as to the size of the pipe and conveyor to be used, being careful to make the conveyor somewhat smaller in diameter than the diameter of the inside of the pipe to permit the free passage of the water, as shown in Fig. 1. The whole device should be set on a frame at an angle sufficient to permit the water to run freely to the lower end of the water outlet. The power can be supplied from the engine either by means of gears, as shown in the sketch, or by a belt or other convenient method.

The water is admitted at the upper end, and the gravel shoveled into a hopper at the lower end, as shown in Fig. 2. By revolving the screw conveyor the gravel will be carried to the upper end of the pipe and ejected, after having been

CRESCENT
BELT FASTENERS

Wouldn't it help a lot if your belts didn't break? There is a Permanent Belt Joint—and only one.

Write us for the Belt Man's Chart No. 4. It tells you how to make it.

CRESCENT BELT FASTENER CO.
381 Fourth Avenue New York

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS

If your rate does not exceed five cents, the saving you make by installing a

HARDINGE WATCHMAN'S CLOCK

will pay for the cost of the clock the very first year.

Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

B. & B. Aerial Tramway Systems

Handle any kind of loose material expeditiously, economically and with absolute safety.

Where the grade is sufficient, gravity supplies all the power, and one or two men can operate an entire tramway.

Ask for Catalog 16 giving detailed information.

Broderick & Bascom Rope Co.
St. Louis, Mo.
New York Seattle

Hill Friction Clutches
Collar Oiling Bearings
and
Complete Power Transmission Machinery Equipments
Catalogs upon Request

Hill Friction Clutch Pulley
Smith Type
(Patented)

The Hill Clutch Co.
Cleveland, Ohio
New York Office, 50 Church Street

The Price Electric Co.

12367 Euclid Ave.
CLEVELAND, OHIO

In buying Pyrometers, cost should certainly not be considered until reliability has been proven.

Price Pyrometers are reliable and in addition they are very likely the most reasonable in price of any pyrometers on the market today.

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

They Drill Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

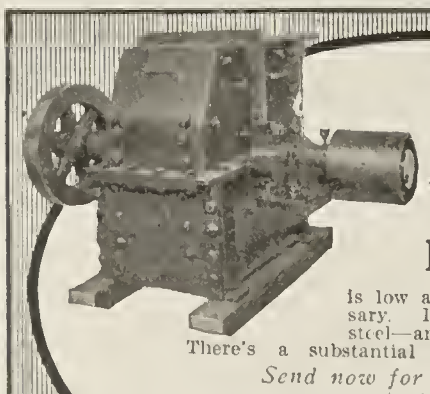
They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. **It paid for itself in the first three months;** it saves enough powder each year to more than pay for its initial cost."

This is interesting because it is a fact.

Send for Bulletin No. 4.

The Sanderson Cyclone Drill Co.
Orrville, Ohio



An investment that stands

The initial cost of a

K-B Pulverizer

is low and covers about all the outlay necessary. It is built throughout of high grade steel—and is practically indestructible. There's a substantial saving in power costs as well.

Send now for catalog with interesting facts and figures.

K-B Pulverizer Company, Inc.
86 Worth St., New York

thoroly washed. It might be necessary in some cases to fix a trap of some sort at the lower end of the pipe for the more convenient removal of sediment which may collect there, having been carried down by the water after successive washings.

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

A. S. Cunningham, a brick manufacturer of Ione, Cal., has returned from an eastern trip and will soon begin construction work on a new plant at Ione.

The Laclede-Christy Clay Products Co., of St. Louis, Mo., announces that J. H. McKelvey has been appointed sales manager, succeeding H. K. Lackland, who has resigned.

Newton Morton, aged 87, a retired brick manufacturer who had resided in Boston for seventy years, died at his home at 80 St. James Avenue, Boston, on June 22. Mr. Morton was born in Whately, Mass.

R. E. Jackson, sales manager of the Buffalo (Kan.) Brick Co., visited Kansas City, Mo., recently. The Buffalo plant is running almost to capacity, and has enough business on hand, it is said, to keep it busy for some time to come.

William Hankins, formerly of Crawfordsville, Ind., has taken over the management of the Paola (Kan.) Brick & Tile Co., succeeding J. W. Jenkens. Mr. Jenkens is now superintendent of a brickmaking plant being constructed at Vale, Mo.

Frederick C. Bausch, manager of the F. E. Bausch Fire Clay Co., St. Louis, Mo., has gone east on business and will be absent for more than a week. Mr. Bausch has installed a new electric grinding mill in his plant capable of handling 100 tons a day.

W. H. McConoughey, who has been with the sewer pipe department of the Euclid Builders' Supply Co., Cleveland, Ohio, has returned to the sales department of the Barkwill-Farr Co., where he was employed until he joined the Euclid organization last October.

Another member of the sales force of the Hydraulic-Press Brick Co. has received his honorable discharge from the rank of salesman at the Toledo (Ohio) branch, to enter the services of Uncle Sam. The salesman is James F. O'Connor, who has enlisted in the Naval Militia as a first class yeoman.

Thomas Moulding, of the Thomas Moulding Co., Chicago, Ill., visited the Columbus, Ohio, branch of the company last week. He also inspected the plant of the Straitsville Impervious Brick Co., at New Straitsville, Ohio, and the plant of the Buckeye Fire Brick Co., at Scioto Furnace, Ohio.

A change in the management of the Livermore (Cal.) Fire Brick Works and the California Brick Co., of Decoto, followed a visit by the eastern directors of these companies.

N. A. Dickey will succeed F. L. Meyers as superintendent of both plants. So far as is reported, there will be no other changes.

John R. Turner, who has been general manager of the Ohio State Brick & Stone Co., of Shawnee, Ohio, since its organization from the Shawnee Flash Brick Co., has resigned. Temporarily, C. B. Young has taken up the duties of general manager in connection with president of the company. The concern is busy manufacturing fire brick and many orders have been booked.

Herman A. Plusch, chemist and engineer of the Abrasive Co., Bridesburg, Philadelphia, Pa., and author of the very complete set of articles on the manufacture of architectural terra cotta which appeared in *Brick and Clay Record* during the first half of 1917, will give a series of illustrated lectures on the clayworking industry at different educational institutions during the coming fall.

E. R. Sturtevant resigned his position as superintendent of the Abingdon (Ill.) Clay Co. some weeks ago to accept the office of secretary-treasurer of the reorganized Hollow Tile Manufacturers' Association, with offices in Chicago. For several weeks prior to his resignation from the Abingdon company, Mr. Sturtevant was performing some of the duties of his office, but did not take up the work in all of its details until after his retirement from his former position. Mr. Sturtevant's family will remain in Abingdon until fall, when it will move to Chicago.

Nils Christian L. Kachelmacher, formerly president of the Hocking Valley Products Co., of Greendale, Ohio, died recently, at Philadelphia, at the age of 57 years. His death was due to a peculiar ailment which affected his throat and which made it impossible for him to swallow food. He was born in Norway and came to America to enter business. He was president of the Hocking Valley Products Co. when the plant was constructed and for a time the town where the plant is located was called Kachelmacher. After leaving the Columbus company he engaged in the oil and gas development business and was quite successful. Later he became interested in iron furnaces. Mr. Kachelmacher was buried at Logan, Ohio.

Fred R. Kanengeiser, formerly general superintendent of the quarries and brick plant operated by the Bessemer (Pa.) Limestone Co., and who was made vice-president and general manager of that company when the brick manufacturing interests were sold to the Metropolitan Paving Brick Co., of Canton, Ohio, was elected a director of the company at the meeting of the stockholders held on June 14. The officers of the Bessemer Limestone Co. are: President, John Tod; vice-president and general manager, F. R. Kanengeiser, and treasurer, John R. Rowland. Claude C. Blair was formerly secretary but is now manager of sales for the Metropolitan Paving Brick Co. Another change which has been brought about by the disposal of the company's brick interests is the abolition of one of the offices of vice-president, of which there were previously two.

Alabama

Papers of incorpoartion were filed recently by the M. W. Berry Brick Co., at Birmingham, Ala., with a paid-up stock of $5,000. The incorporators were W. J. Worthington, president and treasurer; W. E. Wilmot, vice-president, and M. W. Berry, secretary and manager.

California

From Fresno, Cal., comes the news that the magnesite mines at Piedra are to be developed immediately. A cal-

ORIGINAL Boss SYSTEM COMMON SENSE APPLIED TO Drying and Burning ORIGINAL Boss SYSTEM

Boss Ten-Hour Dryer

Would you like to really dry your brick and do it in half less time?

Boss System of Burning Brick

Would you like to improve the quality of your brick and reduce your cost of burning?

Then write for information and we'll SHOW YOU HOW!

JOHN C. BOSS COMPANY
Monger Building - Elkhart, Indiana

Manganese Dioxide

All grades and sizes suitable for manufacture of manganese brick, also high grade ore for chemical, dry battery, paint, varnish and glass trades. Prices quoted upon receipt of inquiry giving full details as to analysis, size, tonnage, etc.

Crimora Manganese Corporation
30 East 42d Street NEW YORK

SIL-O-CEL PREVENTS HEAT PENETRATION TRADE MARK
MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway CHICAGO Monadnock Bldg. PITTSBURGH Oliver Bldg. LOS ANGELES Van Nuys Bldg. SAN FRANCISCO Monadnock Bldg.

Write nearest Office for Samples and Information

Base Metal Couples and Low Resistance Instruments are absolutely unfitted for use on Clay plants.

We do not and we will not sell that class of equipment for measuring temperatures exceeding red heat.

STUPAKOFF PYROMETERS

for high ranges of temperature are equipped only with rare metal couples and high resistance galvanometers. They are dependable and we guarantee satisfaction.

The Stupakoff Laboratories
Pittsburgh, Pa.

SAY "I SAW IT IN" BRICK AND CLAY RECORD

This System Saves $104 Per Month

because one man trucks the brick and places them in the drying shed. The brick are handled in large units—not individually. No injury; no deformity; little labor.

No rails—No turntables—No transfer cars. Send for descriptions of the three Drymore Systems.

Drymore—
FOR LESS

The Drymore System Galion, Ohio

HETTRICK Red Stitched Canvas BELTING

STICKS — DOESN'T SLIP — LASTS

Transmission
Elevating
Conveying
BELTS

The clay plants that are hard to sell to—are the plants that are using Hettrick Belting. It is quality stuff. Ask for information now.

THE HETTRICK MFG. CO.
TOLEDO, OHIO

cining plant to cost $100,000 will be constructed by the Wellman-Lewis Co., of Los Angeles. This will be the first unit of a calcining plant to cost, in all, $500,000.

N. Clark & Sons, whose plant is located in the city of Alameda, Cal., has an exhibit of urns and handsome ornamental work on Park Street. The company has had many inquiries lately for pressed brick, and the fact of its increased cost has not prevented buyers from closing at the enhanced prices.

The Terra Cotta Lumber Co., of Telco, Cal., of which E. T. Mapel is the head, recently secured what is reputed to be the largest single order for drain tile ever let in the state of California. It calls for approximately 120 miles of Telco tile. The plant of this company is prospering with this one neglected opportunity in the state of California—the manufacture and boosting of clay drain tile. T. C. Mapel, formerly superintendent of the Diamond Brick Co., at Pittsburgh, Cal., and of a brickmaking concern at San Jose, just recently became associated with his father in the manufacture of drain tile at the Telco plant.

Work upon the reconstruction of the huge plant of the Steiger Terra Cotta & Pottery Works, at San Francisco, Cal., which was destroyed by fire a few months ago will be started upon the arrival at that point of W. E. Dennison, president of the company, who has been making an extensive trip of investigation thru the East. Debris from the old structures which comprised the company's $2,000,000 plant is now being cleared from the site, in preparation for building operations. The company is still filling orders from its stock and is sending a $12,000 order of pipe to Honolulu on the next steamer that leaves for that place.

A hot discussion has been going on in Los Angeles, Cal., for some time between the city engineer and the new Efficiency Commission over the use of clay and cement pipe for lateral sewers. The Efficiency Commission recommends the use of both vitrified clay pipe and cement pipe; further recommending that bids be received for both kinds. City Engineer Hamlin, however, takes the opposite view, holding that results of experiment and actual use have clearly displayed the superiority of vitrified clay over cement for use in sewer work. In a report the city engineer gives the experiences of other cities with cement as material for sewer pipes as, in a number of instances, terminating unfortunately. Cement pipe laid in sewer work in Los Angeles and taken up six months ago showed that disintegration had set in to such an extent that one section broke as it was being removed from the trench.

In Los Angeles, Cal., the Builders' Exchange, on July 2, took the most important step and the last in its existence. Some two hundred members, consisting of representative contractors, architects, building material manufacturers and dealers, met and by unanimous vote changed the name of the organization to the Building Industries Association of Los Angeles. Following this new departure, a new code of practice was adopted for the regulation of constructional activities in Los Angeles. Among the features emphasized in the code are reciprocal co-operation between contractors and material men, standardization of forms, materials and prices, the doing away with force account methods of construction, and the separation of architect and contracting work in building. Among those who spoke at the meeting were: J. H. Bean, president of the exchange; J. E. Allison, a prominent architect; J. W. Potter, of the Building Materials Association; C. E. Peck, president of the Master Builders' Association; J. J. Backus, chief inspector of buildings of Los Angeles, and others.

There seems to be a great diversity of opinion among brick men as to the local situation and the outlook. Some say that the conditions in the various branches of clay-working are, on the whole, normal or a little better than normal, what is lost in one line being gained in another, so that business averages well up to the standard. Those who are less optimistic, are generally pretty close to the contractor's side of the game, who fear the future because there looms on the horizon an increase of wages for bricklayers from $7 to $8 per day. There has also developed something of an easing up in building activities; and this, notwithstanding a most promising future, has made some members of the trade feel a little uncertain as to the balance of the year. It is admitted, however, that a great deal of money is certain to be spent in San Francisco, and, for that matter all along the coast, but especially in San Francisco by the United States government in raising, equipping and caring for its new army. This great influx of money is certain to result in an increase of building both by the government and by private parties. The labor question is, of course, admitted to be a serious one, and the difficulty in getting iron and steel and various necessary materials is to be reckoned with. Nevertheless, buildings will be needed and will be built, and there will be a big demand for brick, terra cotta, sewer pipe and tiling of all sorts, according to the view of the average manufacturer.

Colorado

While investigating the presence of oil deposits in and around Delta, Colo., Charles Kirk, state geologist of New Mexico, and Doctor George, state geologist of Colorado, discovered a clay deposit which is thought to be specially adapted to the manufacture of glazed tile for use in the construction of silos and farm buildings. The Delta Brick & Tile Co. is now testing the material discovered with a view to ascertaining its commercial value.

Delaware

The Columbia Brick Co. has been incorporated at Wilmington, Del., with a capital of $10,000, to manufacture brick and tiles. The incorporators are Herbert E. Latter and Henry M. Robinson, Wilmington; and Clement M. Egner, Elkton, Md.

Illinois

Some months ago *Brick and Clay Record* published a news item stating that an option has been taken on several acres of land in Goose Lake Township, near Ottawa, Ill., by the Chicago Retort and Fire Brick Co., of Ottawa. It is now learned, however, that plans for the development of this deposit have been abandoned. According to the recent announcement made by Charles S. Reed, president of the company, in the several months which the company has held an option of the Goose Lake Township property large sums have been spent experimenting with the clay and while it was found to be an excellent material and will undoubtedly sooner or later be developed, it was not suitable for the purpose to which his company desired to put it, and for this reason the option has been given up.

Indiana

Boonville, Ind., has just completed the construction of its first brick paved road, and is said to be laying plans for the construction of additional highways of the same material.

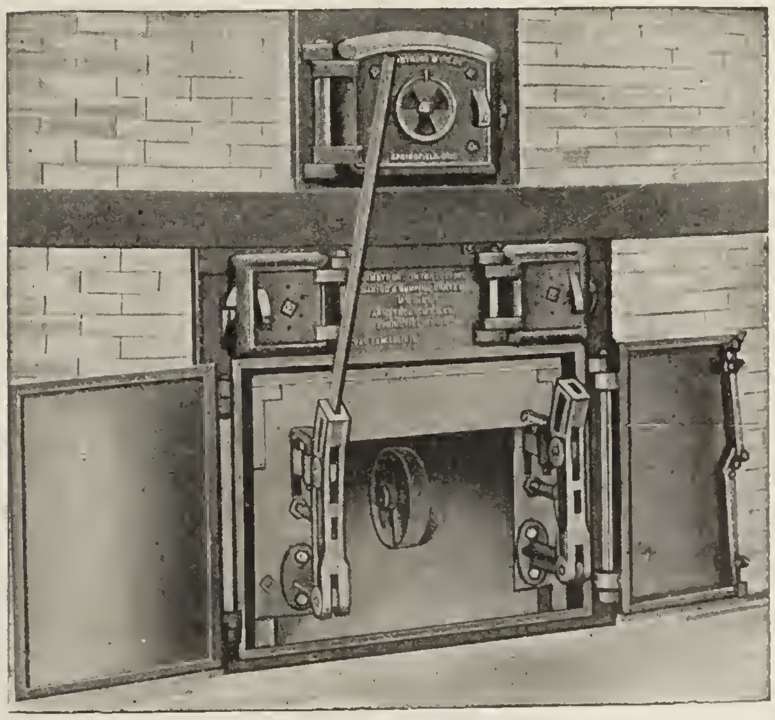
Frank Landgraff, a brick and tile manufacturer of Albion, Ind., died on June 11, at the home of his daughter, in La Grange, Ind. Death followed a stroke of apoplexy, which he suffered a few hours before.

Tycos
FERY RADIATION
PYROMETERS
Eliminate Guesswork from the Manufacture of All Products requiring extremely high Temperatures ★ ★ ★ ★

We Manufacture - Thermometers and Instruments covering every Temperature requirement in Metallurgy and Chemistry

A Catalog Cheerfully Sent Upon Application

The Taylor-Cambridge Division
Taylor Instrument Companies
Rochester, N.Y.


Just one movement of the dumping device of the

Standard Interlocking Kiln Grate

entirely cleans the fire—clinkers as thick as six inches are easily handled.

This is only one of many points of superiority that make this the ideal kiln grate for every brick plant.

We install it at our expense—you give it a thoro trial—if it doesn't do all we claim we'll remove it without any cost to you.
Write for details and prices.

The Armstrong Manufacturing Co.
SPRINGFIELD, OHIO

FITTED
To Individual Requirements

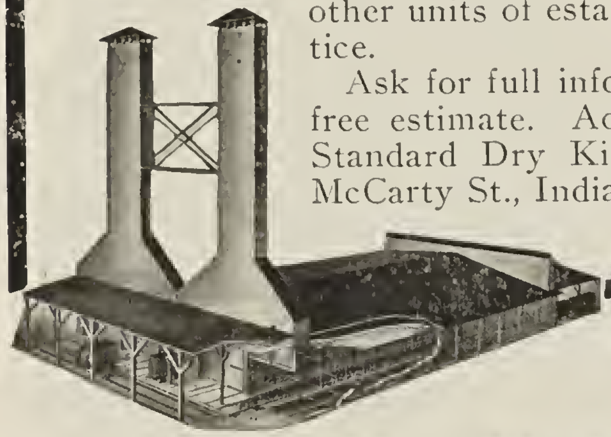
Brick drying apparatus requires individual fitting—to the extent that your clay and steam conditions differ from those at other yards.

The Standard Drier

offers, among other advantages, that of flexibility of arrangement. This feature permits us, and our 30 years' experience qualifies us, to apply our drying equipment specifically to meet existing conditions.

Re-adjustment of present methods is unnecessary. We design and arrange the drying apparatus so that it dovetails with the other units of established practice.

Ask for full information and free estimate. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.



WATT

WATT CARS

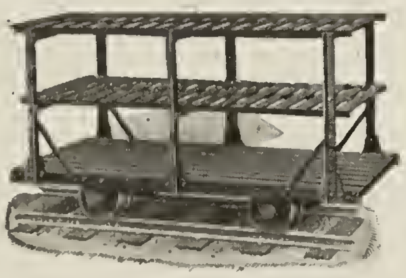
"Always the Best"

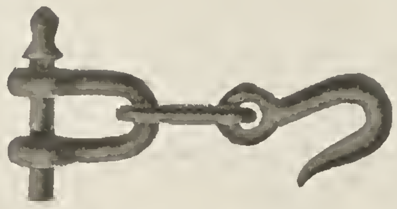
Let us design you a more suitable car for your requirements.

We build cars for every purpose.

Your order—no matter how small or how large—will receive our best attention.

Ask for Catalogs.





THE WATT MINING
CAR WHEEL CO.

Barnesville, O., U. S. A.

Business conditions in Evansville, Ind., are somewhat better than it was a month ago. John Andres, secretary and treasurer of the Standard Brick Manufacturing Co., reports a very satisfactory out of town business, and is optimistic over the outlook for the future.

Brick manufacturers and contractors are interested in the announcement made by Edward C. Kirch, state building inspector, Evansville, Ind., that that city will have a new building code which will become effective on January 1, 1918. The revised code, by embodying all of the state building laws, entirely eliminates friction between the state and local authorities.

Kansas

G. W. Thurston, secretary of the Western Paving Brick Manufacturers' Association, with offices at Kansas City, Mo., reports that the plants in this section of the country are extremely busy at the present time working on orders that will keep them busy for several months to come.

The Lawrence (Kan.) Vitrified Brick and Tile Co.'s plant, near the Kaw River, which has been idle for several years, has been sold to J. J. Simonds, of Iola, Kan., representing a syndicate of Iola business men who intend to rebuild the plant and put it into operation again. The price paid for the property as it stands unimproved is said to have been $16,500. The new company will be known as the Kaw Valley Brick and Tile Co. Some of the machinery in the present plant will be utilized, together with newly purchased equipment and machinery shipped from an Iola plant.

Kentucky

J. M. Bradbury, F. C. Godwin, and H. H. Bradbury have incorporated the Central Brick Co., at Louisville, Ky., with a capital stock of $20,000.

In spite of such talk as there may be about a slump of business in Louisville, H. H. Frazier, sales manager of the R. B. Tyler Co., does not find it difficult to book some brick business every now and then. Most of it is small, however, he said to *Brick and Clay Record's* representative, but there is a good run of it most of the time. The company booked orders for about twelve cars of roofing for the cantonment.

The Kentucky Producers Oil Co. has taken a lease on 10,000 acres of the holdings of the Gilmoure Fire Clay Co., and will drill on the property for oil. This land lies north of Rodbourne, near Morehead, in Rowan County, Ky. There is a great deal of activity in the oil fields in Kentucky, with the price of oil as high as it is. In former years oil has not been high enough to make operations in Kentucky particularly profitable.

The Coral Ridge Clay Products Co., Louisville, Ky., has a considerable slice of the common brick business from the army cantonment, having made deliveries of about 300,000 brick to the grounds for use in construction of manholes and in connection with construction work of the Louisville Water Co., which is building mains into the camp. These brick were shipped by rail to Highland Park and then hauled across country to the camp. Business continues excellent at the plant of the Coral Ridge Co.—so good, in fact, that it has been necessary to decline a number of orders which could not be handled.

The R. B. Tyler Co., of Louisville, Ky., is just completing deliveries on about 300,000 face brick to an apartment house job which is being erected by L. Jacobson, a successful Louisville operator who builds his own houses. Work on the apartment, which is being erected on the site of two old brick houses on Fourth Street, near St. Catherine, began early in the spring. It was, incidentally, about the only large building job in Louisville at the time. The builder used the old brick for backing and has pushed construction. The brick is a smooth, buff brick, made by an Indiana plant, and the result is an attractive and substantial building.

Maine

The Purinton Brothers Co., of Augusta, Me., has just finished burning its first kiln of brick for the season at its yard on the Belfast Road. The kiln contained 300,000 brick. Work has been commenced on the second kiln.

The plant of the Thomaston (Me.) Brick Co., which has not recently been operated because of financial difficulties, has been purchased by Samuel Seiger, of Portland. The property consists of forty-eight acres of land situated within half a mile of the center of the town and with both rail and water transportation facilities. It is understood to have cost the company about $150,000 to erect the plant when the business was established in 1911. Mr. Seiger purchased the property from the administrator of the estate of the late T. W. Carter, who died in Boston a few months ago. He plans to overhaul the plant and put it in operation again soon, it is understood.

Michigan

The display of the Colonial Brick Co., Detroit, at the Builders and Traders' Exchange, Penobscot Building, is attracting considerable attention. The display represents an artistic cozy corner and illustrates the different colorings of face brick and bonds. The display of the Detroit Brick Manufacturers Association shows how common brick may be used to build a modern home. It is a miniature house and cost $3,000 to erect.

A. B. Cook, county agent for Shiawassee county, at Flint, Mich., has taken steps to lease the plant of the Wolverine Brick Co., east of Corunna, with a view of turning it into a tile manufacturing factory. If investigation of the clay available shows it to be the right material for making drain tile, he will attempt to acquire the property and if successful will form a co-operative company. He declares that there is considerable agitation for such a plant, because farmers are tiling their land more extensively than ever before. Shiawassee County, Mr. Cook claims, is not producing more than fifty per cent. of the tile required by its farmers. The entire state is in about the same condition, he asserts. Michigan has less tile-drained land than any state in the Union, according to Mr. Cook.

Missouri

At the Highland Fire Clay Co., of St. Louis, Mo., G. E. Thomas, manager, finds the car situation, which has been a source of trouble to deliveries, is somewhat relieved.

The Parker-Russell Mining Co., St. Louis, Mo., which make brick as a part of its business operations, is now only five months behind orders. The Parker-Russel company is more especially devoted to the manufacture of refractories for gas works, but also manufactures brick for building purposes.

The past week brought a general increase in price of common brick at Kansas City, Mo., from $10 per thousand to $11.50 per thousand. At the same time an increase of five dollars per thousand was announced on 4x5x12 and

Marion

Steam Shovels, Dredges, Draglines and Kindred Machinery

SAYRE & FISHER CO., Sayreville, N. J., large manufacturers of building brick, judge the machinery they use largely by the way it stands the test of the years—which is exactly the way they expect their own customers to judge "Sayre & Fisher Brick."

Sayre & Fisher Own 4 "Marions" —One in Steady Use For 22 Years

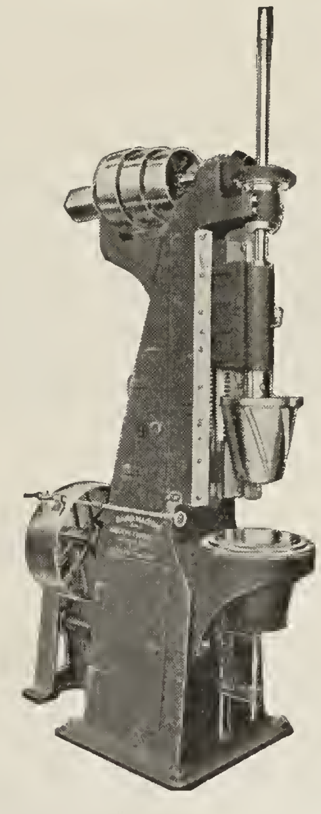
and ALL doing good work every day. The digging consists of such hard-to-handle materials as tough blue clay, and of course there is lots of it.

Perhaps there's work in *your* plant for "Marion, the Clayworker's Shovel." May we help you decide? No obligation to you!

The Marion Steam Shovel Company, Marion, Ohio

Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle

221 ESTABLISHED 1884



FLOWER POTS

You can manufacture them on most any brick or tile plant as a profitable side line. Send us a sample of your clay. Let's find out if you can do it.

BAIRD MACHINE & MFG. CO.

54-56 Jefferson Avenue Detroit, Michigan

TRADE MARK
BRISTOL'S
REG. U S PAT. OFFICE.

RECORDING PYROMETERS
BRING THE KILN INTO THE OFFICE

—right to the Superintendent's desk, giving him more time to do brain work.
The recorders bring him records in permanent form of the temperatures at the kiln. He can compare today's temperatures with that of yesterday, a month ago, or a year ago.

Down at the kilns an equal number of Bristol Indicating Pyrometers act as a guide for the burners. Team work of this sort eliminates all guess work and the resulting inefficiencies.

Suppose you allow us to show you how you also can increase team work and efficiency by the use of Bristol's Recording Instruments.

Write for Bulletin 163.

THE BRISTOL COMPANY, Waterbury, Conn.
Branch Offices:—Boston, New York, Pittsburgh, Chicago, San Francisco

This Cement Required for Good Furnace and Kiln Construction

It is not a fire clay. It is a Fire Cement that will soften at 2318° Fahrenheit and will stick to firebrick—surface or joint—up to temperatures of 2700° without running. Professor Geo. H. Brown, Dept. of Ceramics, Rutgers College, says:

New England Fire Cement has a low firing and drying shrinkage. It will not tend to crack or flake off when applied to the surface of brick work. "Its mechanical and working properties are very satisfactory."

Line a kiln or two with this cement—try it.

Write your own guarantee, then order.

New England Fire Cement Company, Inc.
240 Lisbon St., LEWISTON, MAINE

5x8x12 hollow building tile, bringing the prices to $35 and $55 per thousand, respectively.

Officers of the Kansas City (Mo.) Brick Co., which was recently organized, report that they expect to have the new $50,000 plant at Vale, Mo., under operation the latter part of August. The plant will have a capacity of 50,000 brick, and if plans now being formulated are put into effect a sales office will be maintained in this city.

"Challenge," the new brick of the Progress Pressed Brick Co., St. Louis, Mo., has brought seven orders in three weeks varying in size from 2,000 to 25,000. The brick was put on the market three weeks ago and is a matt surface of an individual style. All the orders are from the city trade; the brick will not be introduced to outside trade until the plant's capacity has been enlarged.

Four new school buildings are on the brickmakers' program for the next few weeks; one of them already has been let and the other three will be given out very soon. The St. Louis school board has two schools projected, and a private school in the city will erect two new buildings. The public schools are the Neosha School, which is now building, and the new Blewett High School which will be contracted for soon. The Principia Military Academy, the private institution, is building an addition to its school facilities and a new dormitory. The Bierman Brick Co. has the order for the addition to the Principia Academy, which will consume about 300,000 brick. The other contracts have not yet been awarded. The Neosha School work will call for almost a million brick. It is expected that bids will be asked for it after the fifteenth of the month. The Blewett High School has not yet been offered to the general contractors, but it will be a good sized job when it is finally opened to the brick man.

Montana

The Great Falls (Mont.) Brick and Tile Co. has let the contract and work will start immediately upon improvements to its plant which, when completed, will have cost in the neighborhood of $100,000.

Machinery is now being installed in the plant being constructed by the Baker (Mont.) Brick Co., under the supervision of W. B. Sherwood, who formerly was superintendent of the Coffeyville (Kan.) Vitrified Brick & Tile Co., with which firm he was associated for twenty years. Mr. Mieir, who is secretary of the Baker company, predicts that brick will be manufacturered at the new plant within sixty days.

New Jersey

New Jersey Brick Yards have welcomed the arrival of a great many colored laborers from the south, who, it is believed, will very materially lesson the severity of the labor shortage in that district.

Green & Pierson, Inc., 91 Main Street, Madison, N. J., have filed articles of incorporation with a capital of $100,000 to manufacture brick. Harry B. Green, David T. Pierson, and George A. Hughes are the incorporators.

The New Jersey Brick Co., Kingsland, N. J., has completed the rebuilding of its plant recently destroyed by fire which was caused by an explosion at the munitions plant of the Canadian Car & Foundry Co., adjoining. The new plant represents an investment of about $60,000.

The Such Clay Co. has just been organized for the purpose of taking over the clay mining business now conducted by J. Ridgway Such on the outskirts of South Amboy, N. J. The business is an old established one, having been commenced by George Such, the father of Mr. Such, in 1856, but owing to the great demand for the various varieties of clay and sand mined by Mr. Such it became necessary to take in additional capital to extend the business and to install additional and larger equipment in order to faciliate the digging of clay in larger quantities. Mr. Such retains his interest in the business and becomes president of the company, in which capacity he will have the general over-sight and management of the affairs of the company. Mr. Amann will be the engineer in charge of the operations. Associated with Mr. Such in the company are Judge George S. Silzer, who will be treasurer; Frederic M. P. Pearse, secretary; Prosecutor Joseph E. Stricker, Gustav Lindenthal, and Edwin B. Day, cashier of the Battery Park Bank, directors.

New York

The Brooklyn (N. Y.) Vitrified Tile Works, 92 Third Street, has increased its capital from $20,000 to $40,000.

The Dolan Brick Co. has been incorporated at Richmond, N. Y., with a capital of $15,000, by J. V. Dolan, L. L. Archer and J. P. Fallon, Jr., all of 408 W. 150th Street.

Reports of manufacturers from the Hudson River brick district, as indicated by statements made at a meeting held in New York City on June 29, showed that the rate of production in the districts supplying New York this year was only fifty per cent. of the total district capacity, or 600,000,000 brick. This will be sufficient, it was explained to take care of present needs, especially since only about 100,500,000 new brick have come into the market this year. Transportation charges have advanced fifty per cent, since last year in the Hudson River district, and labor is thirty per cent. higher.

The state of New York, by establishing three claim divisions in up-state districts, has taken a very forward step in facilitating the handling of workmen's compensation cases. This action, which creates a new district in Buffalo, Rochester, and Syracuse, makes it possible to handle the case in the district where the accident occurs, instead of carrying it to Albany or New York as has been necessary in the past. It is estimated by the State Industrial Commission that 35,000 accidents occur annually in the Buffalo district, of which 5,000 cases claim compensation. In each of the other districts, the accident estimate is 21,000, with 3,000 compensation claims.

Ohio

Many miles of new road are to be built in Cabell County, Ohio, and paving brick has been chosen by the County Court as the material to be used. A quantity of 1,900,000 brick are required to carry out the operations.

The Pursell-Grand Co., Cincinnati, Ohio, which reports a good volume of business considering the handicap which has been imposed by bad weather during the whole season, will furnish 125,000 Fallston brick for a church to be erected in a suburb of Cincinnati.

The city officials of Dayton, Ohio, recently awarded about a half dozen brick paving contracts. The work is to be done during the present summer. Generally speaking there is a falling off in the number of paving contracts over the state of Ohio. Quite a few of the projects have been temporarily postponed owing to high cost of materials.

Just as evidence of willingness to "do their bit" several Cincinnati concerns donated material and services for the construction of the building which will be used at Ft. Thomas for the Y. M. C. A. Among those who gave for this purpose were the Cincinnati Clay Products Co., the

Gold Medal Award

Panama-Pacific Exposition
for

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Their Merits are Vouched for by Hundreds of Satisfied Users
Ask for our New General Catalog No.8

THWING INSTRUMENT CO.
3336 Lancaster Ave. - Philadelphia, Pa.

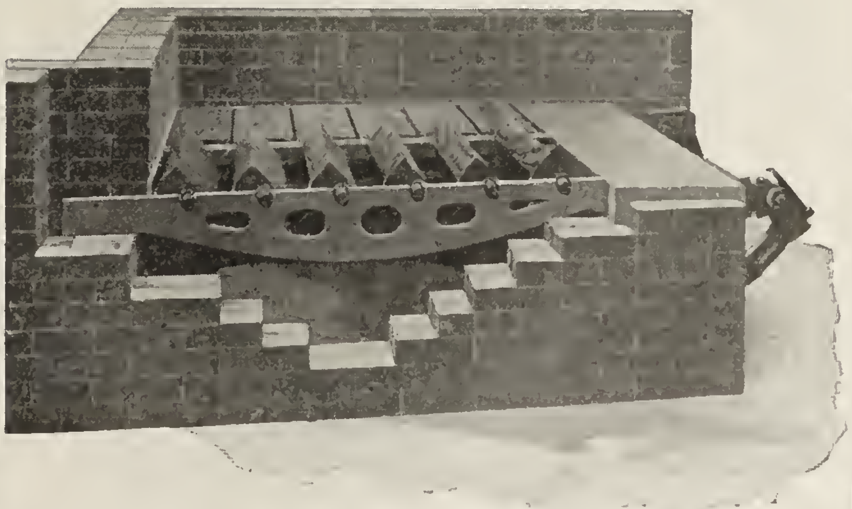
You would say that it was the silliest thing you ever saw
Slant Grate Bars Under The Boiler

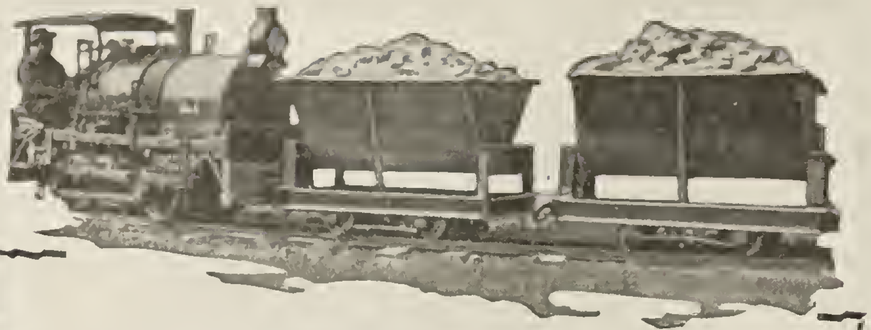
It simply isn't done, it's ridiculous, impossible. Why then do you use them in the kiln furnaces? For, here you burn more fuel, ten times as much, as you do under the boilers. You will be astounded at the savings made by installing

Cyclone Kiln Grates

They burn every bit of the fuel, they are easy to clinker and clean, they burn cheap fuel, are successfully handled by cheap labor, and are perfectly controlled. Can you ask for more?
Get the details of successful use from

The Cyclone Grate-Bar Company
BUFFALO, N. Y.





The **BELL Steam Locomotive**

Its record on a job
126 cu. yds. hauled
42 rounds trips made
8000 feet each
65 miles in 8 hours

On 15 Gallons of Oil at Nine Cents per

Total fuel cost $1.35
Can you equal it?

That is only ONE point. Get the others from

Bell Locomotive Works, Inc.
30 Church Street New York City

You can get a higher price for your brick if you guarantee it will be

Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H. —the dependable brand.

Write for circular and prices.

The Roessler & Hasslacher Chemical Company
100 William St. New York

Chicago, Ill. St. Louis, Mo. Philadelphia, Pa.
Cincinnati, O. Kansas City, Mo. Boston, Mass.
Cleveland, O. San Francisco, Cal. New Orleans, La.

We carry a complete line of high grade chemicals for the clay industry

Chimney Brick Sales Co., the David Hummel Building Co., and several others.

A loss of about $125,000 was suffered by the Federal Clay Products Co., of Mineral City, Ohio, of which George L. Markley is principal stockholder, when the Palace Block, a three-story structure used for business and residential purposes and owned by that company, was destroyed by fire. This is the third heavy loss by fire which Mr. Markley has suffered in the past few years.

After a hard-fought legal battle, the advocates of brick paving won their fight at Akron, Ohio, to have Copley Road paved with the clay block instead of with asphalt or any other material. The county commissioners originally decided to pave the highway with brick, and subsequently decided to use asphalt, but this aroused strong opposition, which carried the case into court, with the result stated.

A $100,000 plant for the manufacture of tile and hollow ware is to be erected in Toledo, Ohio. A fifty-two-acre site, known as the Nason farm, has been purchased at a price of $26,500. The plant will be operated in connection with the Auburndale (Ohio) Brick Co. Irving E. Macomber, president of Macomber Brothers Co., at Toledo, will head the new concern, which hopes to be operating its plant by next spring.

Plans for the manufacture of brick at the Warrensville (Ohio) City Farm for use in the construction of city sewers, buildings, and school structures, have been suggested to Welfare Director Beman, of Cleveland, by Councilman Taylor, as a means of solving the prison labor problem. The soil on the farm, it is said, is suitable. The project, however, is dependent upon the effect it will have on labor in competing industries, and, therefore, does not promise to become a fact.

The Stowe-Fuller Co., of Cleveland, Ohio, manufacturers of fire brick, have given an option to the Goff-Kirby Co., coal and building supply dealers, of that city, on its property between Windsor and Perkins avenues, adjoining the Pennsylvania tracks, at a figure around $205,000. The property is 332x327 feet, and is improved with several large warehouses and thirteen dwellings, principally occupied by employes of the Stowe-Fuller Co. The option is in the name of Henry W. Kirby, of A. B. Smythe Co., real estate dealers.

There is still a fairly good demand for common brick in Columbus and central Ohio territory. This is due largely to a large amount of factory construction, more especially additions to existing plants. As a result there is a good movement of common brick and all plants have sufficient orders to keep going nicely. Common brick of the mud variety are selling at $10 and of shale variety at $11. The cost of deliveries is gradually increasing and it is believed that advances will be made over those figures in the near future.

Both of the plants of the Trimble Paving Brick Co., at Glouster, Ohio, have been closed for an indefinite period, it is announced, on account of the high price of coal and the present high scale of wages. The two plants have for several weeks been operated by a receiver in order to take care of several contracts which were on the books of the company, with the understanding that operations would be continued if they proved profitable. The conditions mentioned, however, made it appear advisable to suspend work for a time, at least.

The special committee headed by W. O. Holst of Toledo, president, and H. S. Gaines, Columbus, assistant to the president of the Ohio Building Supply Association, named to take up transportation matters with the National Defense Council has returned from Washington very much pleased with the treatment accorded and the results obtained. The question of furnishing open cars for building materials is left with the association officers to decide the necessity for the various projects now going forward or to be started. The arrangement means that many building contractors can go ahead with their work and are assured of an adequate supply of materials. A canvass of the entire state as to building projects and road contracts has been made to ascertain the relative necessity of the materials in question.

Work is progressing rapidly in Cincinnati, Ohio, on one of the largest single building enterprises which has been started in the city in several years, this being the Dixie Terminal Co.'s structure on the corner of Fourth and Walnut Streets. The numerous old buildings on the ground to be used are being wrecked expeditiously, and, incidentally, are demonstrating in some instances the solidity of brick construction. One six-story building fronting on Fourth Street, of the solid masonry type, took longer to demolish than any other, solely by reason of the solidity of its construction. Several million brick were removed from the old buildings torn down, and were utilized by contractors in various ways. The new building on the corner will be of brick and steel, and is to be started as soon as the site can be cleared.

Oregon

One of the large orders recently received by the Bend (Ore.) Brick & Lumber Co. called for the manufacture of 2,000,000 brick during the months of June and July, and was placed, according to a local newspaper item, in the hands of Superintendent A. R. Foxley by A. H. Horn, proprietor of the plant. The company is employing twenty men and finished its first burn of the summer during the later part of June.

Pennsylvania

The Haws Refractories Co., Front Street, Johnstown, Pa., is planning to increase the capacity of its Johnstown plant. The company will also make extensions to its plant in Mifflin county which will give it a larger output.

The Columbia Coal & Brick Co. has been incorporated at Philadelphia, Pa., with a capital of $10,000 for the purpose of manufacturing brick and tile. The incorporators of the new concern are Herbert E. Latter and Henry N. Robertson, of Wilmington, Del., and Clement M. Egner, of Elkton, Md.

Rhode Island

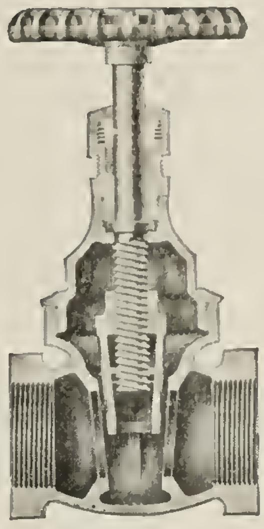
The Barrington (R. I.) Steam Brick Co. is not feeling the effects of the gradual tightening up of the building activity to any great extent, and reports that large shipments of its product are being made almost daily. The company has better facilities than ever for turning out first class brick, several new buildings with modern equipment having recently been erected to replace ones destroyed by fire.

South Dakota

Investigation may prove that there is a deposit of blue clay on the penitentiary state lands in Sioux Falls, S. D., of a quality to make high grade clay products. A bank of blue clay, fifty feet deep, supposedly of a very high grade, has been discovered and in order to ascertain the quality of the material, local parties are having it analyzed. A few years ago a geologist was brought to Sioux Falls by the Com-

Size for size, a gate valve will pass, within a given time, more fluid, with less friction, than a globe valve. For this reason, many users (using globe or angle valves on steam) prefer gate valves for the water lines.

Jenkins Bros. Gate Valves



are of extra strength because their unique **globe shaped** bodies eliminate all chance of internal shrinkage strains in castings, and also provide full, free opening. They are of simple construction, having solid wedges with double face.

They are made in brass or iron body, in three distinct patterns—

Standard, the most desirable pattern for moderate pressures—guaranteed for 125 pounds steam, 175 pounds water; **Medium,** guaranteed for 175 pounds steam, 250 pounds water; **Extra Heavy,** for 250 pounds steam, 400 pounds water.

Also in Cast Steel for high pressure superheated steam.

The way to get a satisfactory service when you buy gate valves is to ask for Jenkins Bros., and look for the diamond trade mark on the globe-shaped body.

REG. U.S. PAT. OFF. TRADE JENKINS MARK

Jenkins Bros.

80 White Street, New York. 524 Atlantic Avenue, Boston.
133 N. 7th Street, Philadelphia. 300 W Lake Street, Chicago.
Jenkins Bros. Limited, Montreal, Canada, and London, E. C. England.

The Pyrometer That Has Set A New Standard

In animate or in inanimate things, in man or in machine, the ability "to do it better" has always been sufficient cause for selection as the Standard.

THE BEIGHLEE PYROMETER

to those who know, has the ability and reputation for doing it better, and a new high standard has been set.

Let us tell you why, in our opinion, this pyrometer will save you money, then **you use your own judgment.**

Write the

BEIGHLEE ELECTRIC CO.

Cleveland, Ohio

Herman A. Holz
Hudson Terminal Bldg.,
New York.
Representative in
New England States.

"SAY I SAW IT IN" BRICK AND CLAY RECORD

A BRICK STORY
Perhaps it fits your case

Every brick that is bought from your plant to go into another man's wall is whose brick?

YOURS ALWAYS

Your future, the future of your plant, your reputation, is dependent on the action of that brick in every wall that you sell.

If it stays always a good brick in color and body, it is a perpetual advertisement beautiful—for you.

But, if it scums, if it shows up grey on a clear deep red, if it assumes in a few months a dirty-yellow-grey-whitish indescribable color, your reputation, your business is hurt.

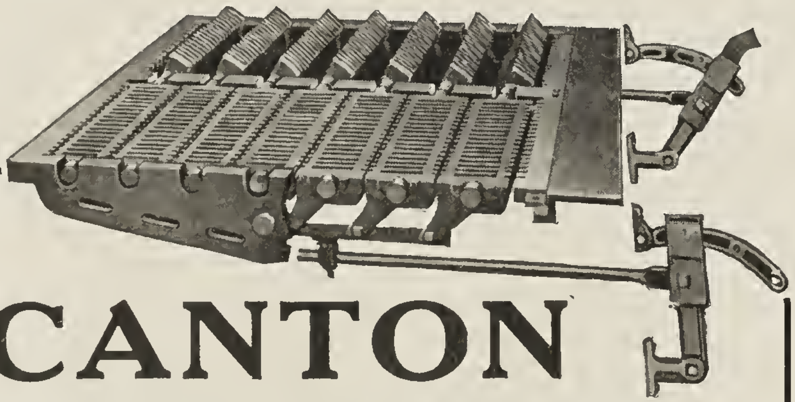
It is your fault—yours alone—a result of carelessness or ignorance, or both, which does not mend matters.

The cure, the preventative absolute of scum is

ROLLIN'S BARIUM CARBONATE

and if you will write us, we will tell you all about it, and how easy and surprisingly cheap is the process applied at your pug mill.

ROLLIN CHEMICAL COMPANY
Inc.
Charleston, West Virginia
General Sales Agents
National Aniline & Chemical Company
244 Madison Ave., New York City



CANTON
Shaking and Dumping
GRATES
Not a TRIAL Nor An EXPERIMENT

When it comes to saving fuel, keeping the fires clean, removing clinkers and ashes easily, these grates have proved their practical utility for many years.

The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

When you want Grates—don't forget to investigate the merits of the Canton Boiler Grate. Write for catalog.

THE CANTON GRATE CO.
1706 Woodland Ave.
CANTON - - - - OHIO

mercial Club and a study was made of the clays in the country surrounding that city to determine the presence of material suitable for the manufacture of clay products, but nothing of value was disclosed. Further investigation of this locality was made by the state geologist last year, but the results were again unsatisfactory, all of the clays tested containing lime in such quantities as to make their use for manufacturing purposes impossible. The deposit recently discovered around the state penitentiary, however, appears to contain no foreign substance that would reduce its value as a brickmaking material.

Texas

The Thurber Brick Co., of Dallas, Tex., was awarded the contract to supply the city of Dallas with paving brick during the years of 1917 and 1918. Manning B. Shannon acted as representative for the Thurber company at the commission meeting at which the contract was secured.

The Fraser Brick Co., of Dallas, Tex., reports that building prospects are unusually good in nearly every part of the state. This fact is evidenced by the large orders which the company is receiving for hollow tile. In order to fill these orders it has just placed a contract with the Wichita Falls Brick & Tile Co., for 6,000 tons of this building material which is equivalent in volume to approximately 5,000,000 brick. This tile is to be shipped during the next twelve months to different points in the central part of West Texas. It is stated by J. H. Payne, of the Fraser Brick Co., that many deliveries of brick and tile are now being made to different points in the Panhandle and Northwest Texas. He says: "We have absolute faith in decidedly prosperous conditions in Texas in the immediate future, and for a long time to come, and rather than retrenching we are enlarging our plants and arranging for increased production from every good source. Within the last ten days we received two important orders for shipment to New Mexico, in spite of our present handicap in the way of excessive freight rates."

Virginia

F. Briggs Richardson, Surry, Va., is planning to purchase brick manufacturing equipment for use at a local plant.

A new fire brick plant, which will specialize in the manufacture of silica brick, is being erected at Arrington, Va., by Oliver Bros., Inc., of 71-73 Murray Street, New York City. Thomas E. Oliver is president of this concern.

Washington

The American Fire Brick Co., of Spokane, Wash., manufacturer of magnesite brick, has leased an old brickmaking plant at Lacy Street and Liberty Avenue, in Spokane, and will, it is reported, spend $15,000 to $20,000 in rehabilitating the old factory.

The old plant of the Spokane (Wash.) Clay Products Co. has been sold, by order of the court, to representatives of C. B. Stowe & Co., of Cleveland, Ohio, for $7,800. The latter company has leased the plant to the American Fire Brick Co., of Spokane. The old machinery now in the works will be scrapped, the large brick buildings reconstructed and improved and between $15,000 and $20,000 expended for new machinery, and in the erection of four new kilns. The plant will manufacture magnesite brick and ferro-magnesite, material being secured from the deposits of the United States Magnesite Co., near Springdale, Wash.

BETTER TIMES AHEAD *in* GOTHAM

(*Continued from Page* 126.)

There is evidence that the construction of new buildings of a private nature is growing more active. Architects, contractors, and builders are more inclined today to hand you a good cigar when you call than they have been for many weeks, and that is a pretty good sign. When good Havanas flow freely in the construction headquarters, something good has happened or is about to happen. The steel market is having its ups and downs, mostly ups, and the market is likely to be dominated by government orders for some time. Prices are excessively high. The lumber market is healthier and showing signs of an awakening in the building construction business. The fact that there is a tendency to further price advances is at once displeasing and indicative of action in the construction business. The price of lime has gone up to $2.10 a barrel of 280 pounds net for Eastern finishing, and mason's common can be bought for $1.90. Portland cement is holding firm at $2.12, and the market is looking bright.

BRICK DROPS TO $9.50

Brick took a decided drop the first week of July, going from $10 to $9.50 after holding the former figure for several months. For some time it has been felt that brick would come down, and it is thought that the reduction may stimulate the market a bit. Brick manufacturers have had their own troubles, but they are a happy lot for all that, and in these days when everybody is told to "do his bit" in the name of patriotism it is noticed that reductions are not coming thick and fast. Brick men see the handwriting on the wall. They know that war or no war people have to have roofs over their heads, and it takes four good brick walls to make the best kind of a support for any kind of roof you may name. Manufacturing is proceeding in all the yards in the Hudson and Raritan districts, and there ought to be a good supply on hand when the word is passed to "speed up building."

More money is coming into the market for investment in mortgage loans and confidence in the safety of New York realty is not reduced. Conservative people feel that new construction for some time is going to be restricted to the minimum of actual and unavoidable necessity, and yet it is known that new work contemplated for the immediate future is entirely out of proportion to the actual current needs of the city. Demand for space greatly exceeds supply, and buildings now under construction will nowhere near meet it. Not so very long ago the real estate market was swamped with bargains. Mighty fine properties bore big price-tags that had been slashed just like the price-cards of a bargain counter, but foxey gentlemen with the "kale" and with the ability to look further than the tips of their noses went shopping for these bargains and they have all been gobbled up.

HEALTHY SPECULATION AN OPTIMISTIC SIGN.

If anybody is foolish enough to think New York, or the United States, or any part of either, is going to the bow-wows just because the rest of the world is not getting along smoothly with the Hohenzollern family at

You want

BURNING CONTROL

To get it—

You Need More Than Your Experience and Good Judgment

Why don't you try the Veritas System? It opens up entirely new methods of temperature control, it teaches you new points in burning that are not ordinarily evident, it indicates exactly, at any time, just what work the heat is accomplishing, it is always accurate and greatly increases the interest of the burners.

Such firms as the Cleveland Hydraulic Press Brick Co. and The Dover Fire Brick Co. are using it, and new high grade plants are added each week. We guarantee results or we won't install.

The Veritas Firing System Co.
Trenton, N. J.
and Herbert Forester, Box 37, Cleveland, O.

Look This Car Over Carefully

Note the way it is braced, and the manner in which it is put together. Stout and rugged, capable of resisting dipper hammering, big chunks dropped into it, derailments, etc. In addition it is Bottom Dump, it does not hammer itself to pieces when dumping.

The Youngstown Steel Car Company
Youngstown, Ohio

IF IT'S A QUESTION OF KILNS—
WE CAN ANSWER IT

Equally efficient in round, square or rectangular kilns, single or multiple stack type. New Hook Kilns cost less, as a rule, than kilns of other styles. Old kilns can be changed to our type at comparatively small expense.
Give us number and size of your kilns, kind of ware, burning time and fuel consumption. We will estimate cost of installation and saving that can be effected.

Grate Bars, Bands, Lugs, Ventilators, Castings

HOOK PATENT KILN CO.
High and Spring Streets
COLUMBUS, OHIO

Berlin, they want to take another think. It takes nerve and money to speculate, and there is precious little, if any, speculative building just now; but, before long, nerve or no nerve, money or no money, there will have to be some building done to take care of the growing demand. How soon somebody starts something depends upon several conditions. High cost of materials is an important factor, and the holding of current high prices for structural materials will keep the volume of new work down. High prices generally may continue during the period of the war, but brick and clay producers and dealers can be depended upon to do their bit to keep this part of the world right side up to the best of their ability, as witness the drop of a half dollar on the price of brick.

Plan filings for the first week of July for the greater city totaled $662,615 for new buildings, of which Manhattan furnished $130,175; Bronx, $95,700; Brooklyn, $306,400, and Queens, $130,340. Alterations for the entire city took $332,366. For the corresponding week of 1916 new buildings totaled $3,234,039 and alterations $180,819. From January 1 to July 8 new buildings projected in New York total $50,449,476 and alterations $11,372,225. For the same period in 1916 new buildings totaled $98,296,171 and alterations $15,628,083.

* * *

RATE FUNDAMENTALS *and* TARIFF INTERPRETATIONS

(*Continued from Page* 131.)

lar person, locality or commodity. It should be noted that the legal restriction is not against all discriminatory or prejudicial adjustments, but only those that are unduly so. Like the question of a reasonable rate, whether discrimination or prejudice is undue is a question of fact.

About the determination of this question there have grown up numerous precedents which are beyond the scope of this series. One fundamental principle, however, should be noted. It is that a carrier cannot be charged with discrimination for which it is not responsible or to which it is not a party. For example, C may be a common market 100 miles distant from A and B. The rate from A to C on drugs may be 10 cents and the rate from B to C 30 cents. The latter adjustment, if operating and other conditions surrounding the hauls from A to C and from B to C are substantially similar, is clearly discriminatory against B, but, if the carrier serving C from B does not also reach A and haul traffic from A to C, no charge of discrimination may be maintained against it. If the same carrier directly served all three points or participated in traffic from both A and B, a different situation would be presented.

One other general restriction to be borne in mind is that carried in the fourth section of the Act to Regulate Commerce. This section is popularly known as "the long and short haul clause." It provides that, unless otherwise authorized by the Commission, it is unlawful for an interstate carrier to charge more for a shorter distance over the same line or route than for a longer, where the shorter is included within the longer haul. This means that, without permission of the Commission, the charge from A to B may not lawfully be higher than the charge from A thru B to C.

STRAWS *that* SHOW *the* WIND

Brief Paragraphs from Many Points Indicating the Market's Trend in the Light of Building Activity

Buffalo, N. Y., building permits for the month of June showed a valuation of $1,344,000, as against $1,691,000 for the same month of 1916. Wet weather, combined with high prices of materials, are given as the cause for the retarded building operations.

* * *

Building operations in Rochester, N. Y., for the first six months of the year shows a decrease in valuations of more than one and a half million dollars, compared with the corresponding period last year. In actual figures, there has been a decrease of 138 permits for a decreased value of $1,610,524. The same report shows that during the month of June, permits issued were less than in any June since 1909. For the month just closed there was a decrease of more than fifteen per cent. compared with June, 1916. There were 226 permits issued for a building value of $560,032, compared with 280 permits for a value of $672,042 for June, last year.

* * *

That the people in Pittsburgh, Pa., are becoming reconciled to the present cost of building is evidenced by the Pittsburgh building report for June. The figures show that during last month 381 permits were issued, for operations to cost a total of $976,259, compared with 368 permits and $940,762 in June, 1916. The totals for May of this year, which is always one of the most active months with builders, were 500 permits which had a value of $1,433,432. Last month permits were granted for 244 new buildings, to cost a total of $738,389, as against 95 new buildings permitted in June, 1916, costing $561,631. While last month's report exceeded expectations it did not disclose the whole situation. During the month a number of applications were filed for permits for some big and costly operations, some of which are not included in last month's totals because the permits have not yet been granted.

* * *

Despite the war, and its attending ills, Newark, the metropolis of New Jersey, but nine miles from New York, reports just the opposite conditions regarding construction operations as its big neighbor. While New York went behind for the first six months of 1917, Newark actually shows an increase of nearly three-quarters of a million dollars in value of projected buildings. From January 1 to June 30, a total of 1,399 permits with an estimated value of $5,085,852 is shown, as against 1,363 permits with an estimated value of $4,455,667 for the first six months of 1916, revealing an increase for 1917 of thirty-eight permits and $730,185 in value.

For twelve months July 1, 1916, to June 30, 1917, the estimated value of building operations in Newark was $9,523,639, as against $8,029,075 a year ago, showing an increase of $1,494,564. Most of the increased outlay is due to mercantile and industrial plant construction with a falling off in dwelling operations which is resulting in housing congestion. This is directly due to the high cost of labor and materials. June permits show a drop of $98,724 in estimated costs compared with June of last year. Out of $1,208,817 worth of

Lakewood Cars

are of any type or size for all conceivable purposes and all are well made.

When you want CARS, just

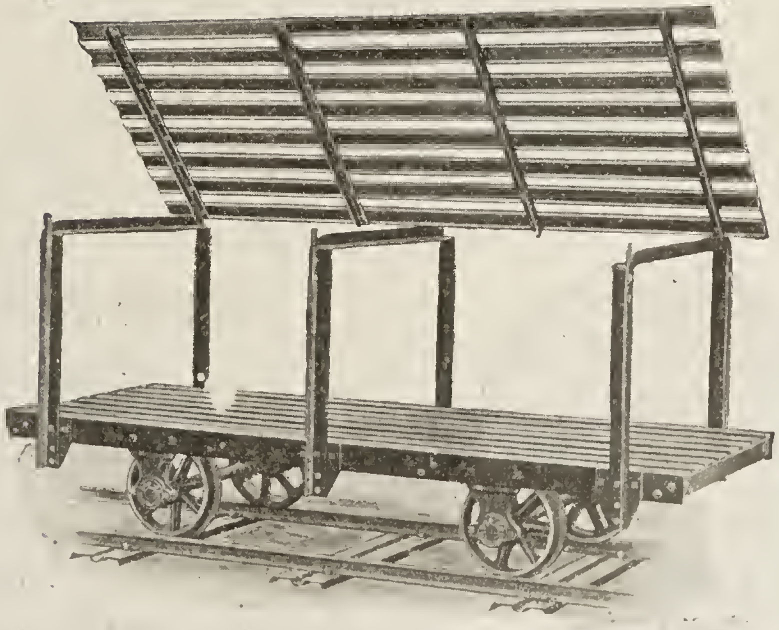
Leave-it-to-Lakewood

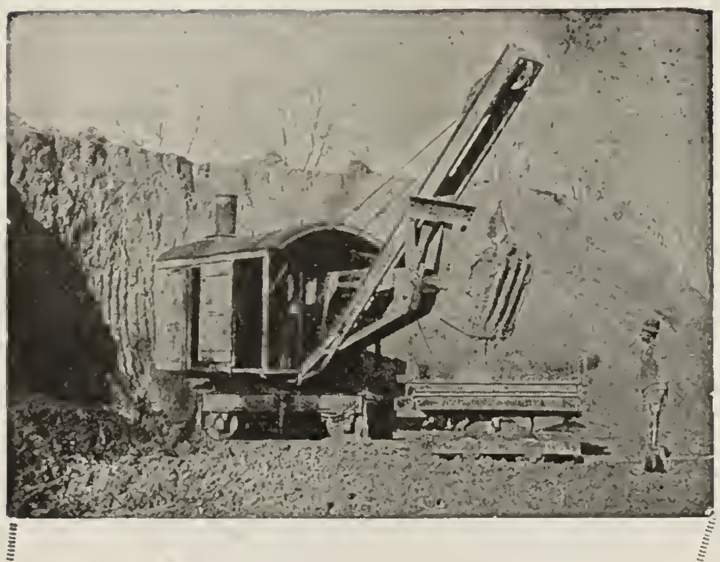
The dryer cars are entirely of steel construction, except the wheels and bearings which are made of a Superior Quality of cast iron.

The decks are made of channel slats, which altho light in weight are exceptionally stiff and rigid.

State your car requirements to us and be sure of the best material and service possible.

The
Lakewood Engineering Co.
Cleveland, Ohio





If

you were Aladdin and you could wish and then rub your lamp, and have immediately ten more stout, husky men for your plant ..... if you were Aladdin and could wish and rub and get more clay perfectly mixed..... if you could rub that old lamp once more and have your pit costs cut in half .... Say,— how much would you take for that lamp?

....

and yet you don't own a THEW.

It takes the place of at least ten men; it gets more and better mixed clay—all at a lower cost, which is a tale that we can prove absolutely.

STEAM SHOVELS THEW HORIZONTAL CROWDING MOTION LORAIN FULL CIRCLE SWING

The Thew Automatic Shovel Co.
Lorain Ohio
New York Office: 30 Church St.

building permits issued for June, $1,075,044 was for structures of brick or other fireproof construction. In June, 1916, the value of permits issued was $1,307,541.

* * *

Building operations in Norfolk, Va., in the year ending June 30, showed a decided decline when compared with figures for the same twelve months of last year. In spite of this, never has structural labor been in so great demand in Norfolk and never have buildings of such value been under construction. In the last fiscal year 596 permits to build were issued by the building inspector, representing structures valued at $1,768,740. In the year that ended with June of 1916 there were 691 permits, aggregating $2,902,988. The decrease is explained in several ways; a permit for the construction of warehouse piers valued at $1,000,000 inflated the 1916 figures abnormally and in addition, several labor strikes in the past year retarded building and caused a number of proposed structures to be withdrawn from the market.

* * *

Each day shows improvement in the Detroit brick business, inasmuch as the building situation locally is showing splendid improvement. People seem to have become adjusted to new conditions—the war loans, war taxes and increased cost of all materials—and are now planning to go ahead with expansions as before. There is a normal amount of small work, such as single residences, two family houses, factory additions, and so forth, and there are a number of big buildings already under construction, all of which is stimulating the brick business. While the Detroit manufacturers do not expect business during the summer to be quite as good as during the past few years, they are selling all the brick they make and are getting the highest price ever for it. The face brick dealers also report that, while they will not equal last year's record, they will be satisfied if business holds up as good as it is right now. Freight transportation conditions have improved so that incoming and outgoing shipments are as they should be.

* * *

Cleveland's building total for June was $2,848,550, showing a slight increase over the same month of last year. The aggregate for the first half of this year is over $1,600,000 ahead of the corresponding period in 1916, the total being $14,622,080. The number of individual permits issued is somewhat less than last year, but there is an increase in permits for manufacturing structures.

* * *

According to the report of the Columbus (Ohio) Building Department, building operations in June were fairly active and did not show as much falling off from the previous years as some former reports. According to the report, the department issued 197 permits for a valuation of $470,510 in June, 1917, as compared with 289 permits and a valuation of $557,370 for June, 1916. For the first six months of the year the department issued 1,235 permits having a valuation of $2,434,730, as compared with 1,682 permits and a valuation of $4,161,435 for the corresponding period in 1916.

* * *

With the congestion in shipping circles gradually disappearing there is a better car supply for the shipment of brick and clay products. This is especially noticeable among the common and face brick factories in the Hocking Valley district and central Ohio. Most of the local manufacturers state that their car supply has been about seventy-five to eighty-five per cent. of requirements and all are well pleased with the results.

Building activity in Cincinnati, Ohio, has been fairly satisfactory of late, considering the tone of conservatism evident in business and the bad weather which has marked the season. Most of the new work started has been relatively small, as indicated by the fact that while 1,183 permits were issued in June, the value of the work was only $658,940, as against $1,082,580 for June, 1916. The first half of the year showed up well, as compared with last year, with a total volume of work amounting to $6,740,410, as against $6,875,455 in 1916.

* * *

Building in Kansas City is going forward nicely according to the figures shown for the month of June at the City Hall. Nearly all of the permits for building issued were for brick constructed buildings. There was an increase of 56 buildings started during the month of June, 1917, over those started during the same period a year ago, permits being taken out during June of this year for 371 buildings, against 315 a year ago. The total cost of the buildings started in June of this year was $623,630, against $974,425 of those a year ago, thus showing a decrease in cost of $350,795. Building operations for the first half of this year are well ahead of the same period of 1916, official figures for these two periods being $6,161,790 and $5,551,229, respectively, showing an increase of $610,561.

* * *

Building in El Paso, Texas, which has been at high speed for the past year or more, will not be materially affected by the war, but will go on with undiminished activity is the opinion of most of the contractors and material men of the city. While there may be a temporary slack during the present summer months, it is only on account of the period of change from peace to war, but there will be no lack of capital, nor any inclination on the part of the people generally to curtail sensible expenditures on account of the military situation. The following figures show an increase of $747,013, or 39-plus per cent., in building in 1917 over 1916.

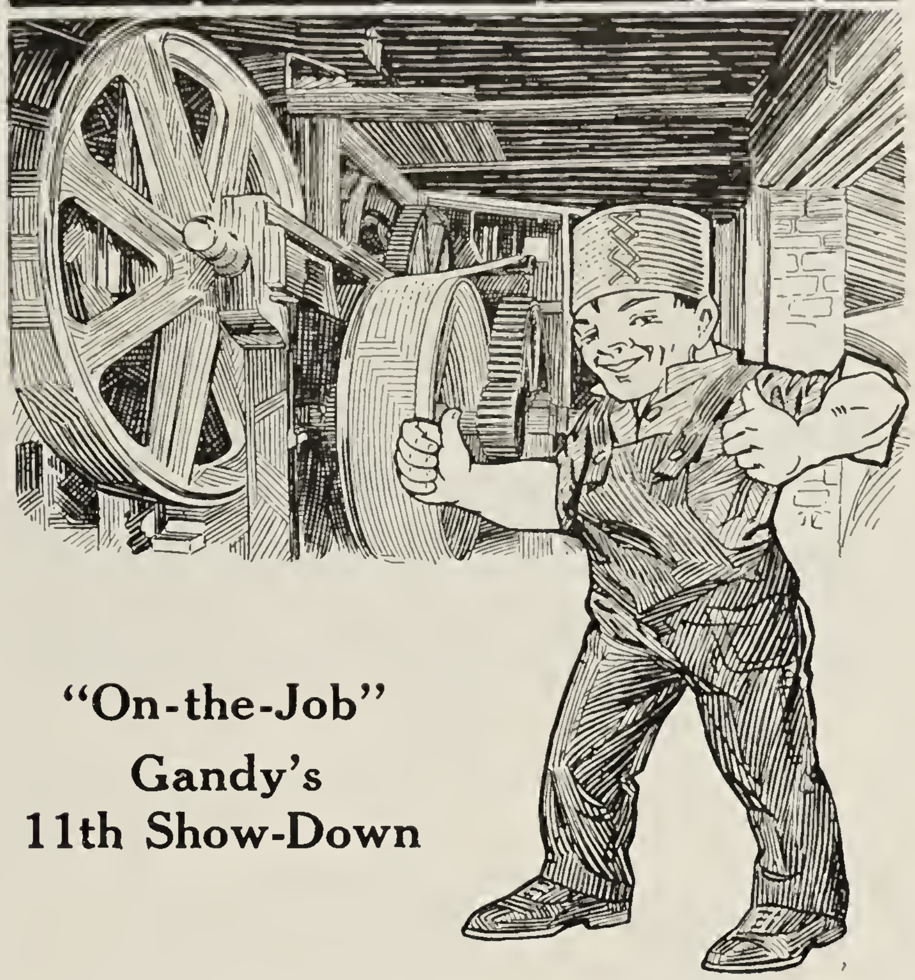
1916		1917
$ 312,077	January	$ 107,107
437,179	February	468,525
405,772	March	724,110
322,060	April	661,430
231,421	May	366,220
181,950	June	310,080
$1,890,450		$2,637,472

* * *

The building totals in Los Angeles, Cal., for 1917 to date fall a little short of those for like periods in two or three other years in the city's annals, but it ranks among the best records in construction yet made in that city. The figures for the fiscal year ending June 29, show that building operations reached the large volume of $18,937,484. This was a gain of more than $5,500,000 over the total for the previous fiscal period. The figures for the last half year alone are even more encouraging. From January 1 to June 29, inclusive, the total valuation of structural work in Los Angeles was $11,670,815, or at the rate of nearly $2,000,000 a month. The total for the corresponding six months of 1916 was $7,793,267, or $3,877,548 less, the average valuation per month being only a little over $1,250,000.

* * *

The Fords Porcelain Works, Perth Amboy, N. J., manufacturer of porcelain earthernware, has filed plans for the erection of a one-story, brick and steel addition to its plant on Lehigh Avenue. Abel Hanson is head of the company.



"On-the-Job"
Gandy's
11th Show-Down

From a Large Pug Mill in New Jersey comes this report about me—the original stitched cotton duck belt.

" 'We have not yet succeeeded in wearing out any of our GANDY BELTS. In fact, they show almost no signs of wear, in spite of hard service which brick manufacture puts upon them.'

"I tell you this, not because I'm puffed up with pride at the fine service I'm giving everywhere, but to prove to you that every day, every week, every month you keep me out of YOUR plant you are depriving yourself of a brawny, built-for-the-job profit builder.

"Send for me through your supply house or my home direct. Look me over when I come. My painted green edge and the well-known GANDY trademark will tell you at a glance that I'm the **genuine** 'On-the-Job' GANDY stitched cotton duck belt—the belt with a 37-year reputation for getting **all the pull from the pulley.**"

Write for samples and prices

The Gandy Belting Company
732 West Pratt St.
Baltimore, Md., U. S. A.
New York Branch: 36 Warren Street

The Cost per Thousand Is Low

The Selling Price Is High

For certain kinds of work

SAND LIME BRICK

are better than all others.

The factory equipment needed is simple and inexpensive, the ingredients are 95% sand and 5% hydrated lime.

With our machinery and equipment, good materials and good superintendence, a truly splendid brick can be produced.

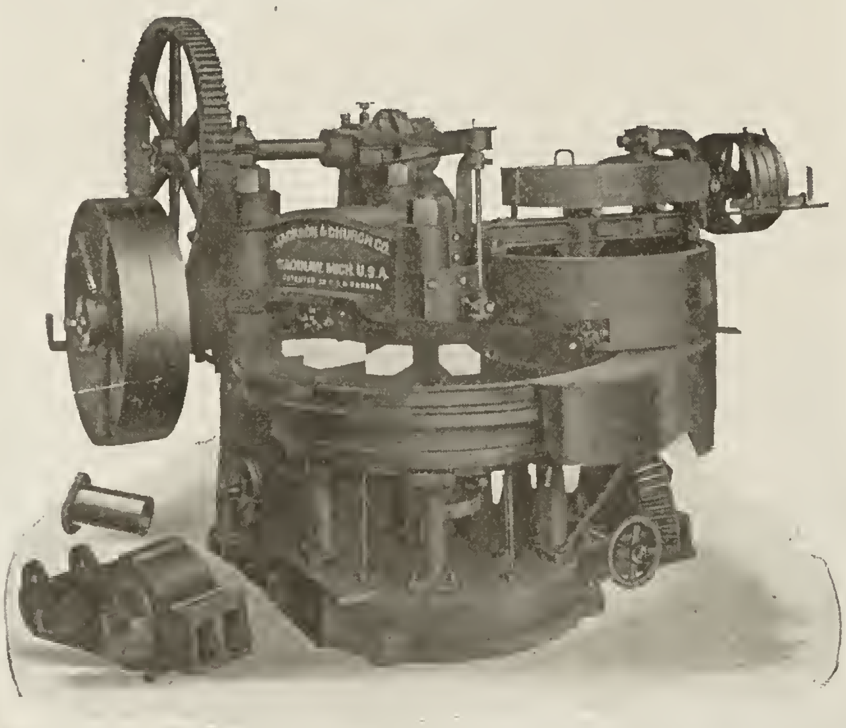
It won't be long until sand-lime brick are in universal use.

Get complete information from

Jackson & Church Co.

Saginaw, Mich.

Builders of a complete line of Sand-Lime Brick Machinery, Boilers, Rotary Dryers, Kilns, etc.



POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

MANUFACTURERS THREATENED BY GAS SHORTAGE

An increase in the price of gas to manufacturing potters, varying from fifty to sixty-five per cent. has just been announced. No supply is promised at this price during the winter, and manufacturers have been tipped off to make arrangements to use other fuel. This increase in fuel cost amounts to over $5,000 increased expense to some manufacturers. The notice received by the pottery trade reads as follows:

"You are hereby notified that there will be a change in the rates to industrial consumers of the Manufacturers Light & Heat Co., to go into effect on the first day of August, 1917, as follows:

First 250,000 cubic feet	31c per M. cu. ft.
Next 750,000 cubic feet	29c per M. cu. ft.
Next 2 million cubic feet	27c per M. cu. ft.
Next 7 million cubic feet	26c per M. cu. ft.
Next 40 million cubic feet	25c per M. cu. ft.
All over 50 million cubic feet	24c per M. cu. ft.

"Discount of 1c per M. cubic feet is allowed where payment is made on or before the twentieth of the month following that for which bill is rendered. Application therefor having been filed with the Public Service Commission of your state.

"While this rate has been established to be operative during the next few months when the domestic demands are comparatively light if there is no change for the better in the cost and difficulty of obtaining a gas supply, due not only to the increased cost of production but also to the depletion and exhaustion of developed territory and the inability so far to find new territory, then, in *all probability on or before December* 1, 1917, *this company will be forced to withdraw its industrial rates and not undertake to supply industrial consumers.*

"With this probable action in prospect, you are accordingly advised to make such preparation as you may deem proper for the change of your appliances and the introduction of other fuel than natural gas."

On account of the threatened inability of pottery manufacturers to secure a full gas supply for the coming winter, many manufacturers are now arranging to fire with coal. The cost of changing the kilns from gas to coal will prove to be no small item of expense, based upon present cost of labor and other items entering into the changes. On top of this, the manufacturers admit that they are unable to make favorable coal contracts, and so far none have been made that extend beyond October 1. The situation is the most unusual in this respect ever experienced by the Eastern Ohio pottery manufacturers.

POTTERS AWAIT BROTHERHOOD'S ACTION

Pottery manufacturers interested in the general ware trade are now anxiously awaiting the receipt from the officials of the National Brotherhood of Operative Potters, the list of demands, which are to be considered at a joint wage conference that is to be held probably in August. While published reports from the convention of the workers at Atlantic City intimate that the potteries have worked to greater capacity than ever before, such statements are not in accord with the actual facts concerning the situation. It is common knowledge in all pottery centers that potteries have not been able to operate to capacity any time during the last nine months, the production averaging from sixty to seventy-five per cent. of capacity.

While the production of the potteries of the country shows a higher valuation, this is based upon the increased selling lists, due to the advances made to the pottery workers and the increased costs of raw materials. All pottery manufacturers admit that the labor situation as it is now existing, is the worst ever experienced, it being impossible for the pottery managers to secure a sufficient quota of workers in any branch to fill the gaps. It is also known that it has been very hard from time to time to keep men at their places. Some will work for a few days, and then take the balance of the week off. This is especially true of the small help. These are the conditions which have kept the production down, and put the manufacturers in a position whereby they cannot make shipments. If potteries were working to capacity, order files would be relieved of a host of orders that are now unfilled, with no telling when they will be shipped. The work is available in potteries for all who want to stay at their benches, and with full crews available at all times, the pay rolls would be far greater than they are now.

GOVERNMENT OFFICER INVESTIGATING POTTERIES

Harwood Stacy, affiliated with the Department of Justice, Washington, D. C., has visited a number of general ware pottery manufacturers in the upper Ohio Valley territory, and has been asking numerous questions, so it is said, concerning selling prices. About two years ago or more, Washington officials made a detailed investigation of the domestic pottery business, and this is the first time since then that a representative of the government has appeared in the Ohio territory seeking new light from the trade. Mr. Stacy was told, so it is said, that the increased selling lists for finished products was caused by the ever-increasing cost of labor and raw material, and that prices might go even higher. Should the workers succeed in securing another increase of from ten to twenty per cent., as they have been threatening to ask for, there is no doubt at all but what selling lists will again be advanced.

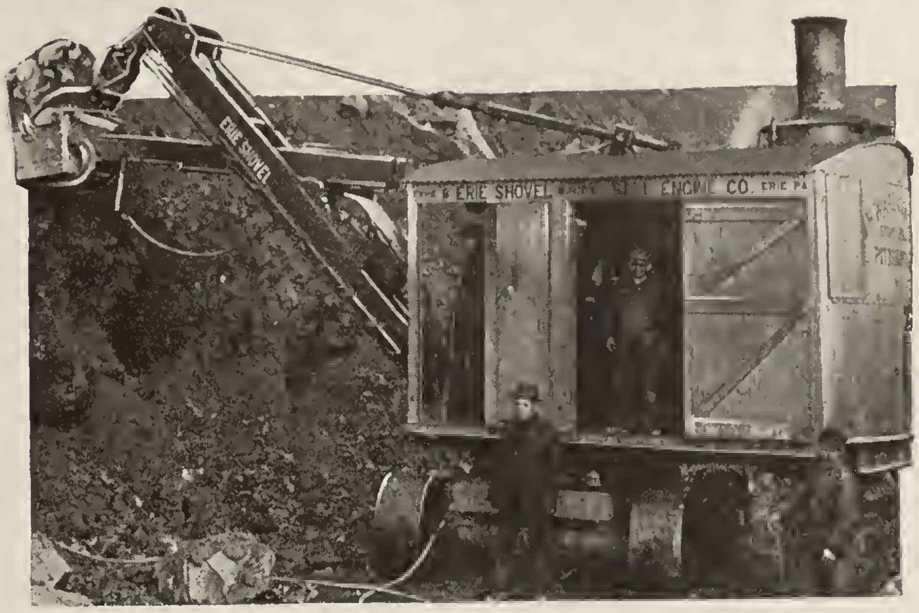
DEMAND FOR OPEN JARS GOOD

K. P. Snyder, of the Louisville (Ky.) Pottery Co., discussing the uses to which the open jars would be put this year, in view of the high cost of glass and the scarcity of tin containers, said that pottery manufacturers had discussed conducting a publicity campaign dealing with the proper methods of sealing preserved fruits, etc., in stone jars. The older generation understands the trick thoroly, it is agreed, but the younger generation does not. However, in view of the fact that the demand will undoubtedly overtax the capacities of the plants, it was decided not to undertake this work at present, altho something of the kind would be excellent later on. Mr. Snyder said that his plant was running full time, but not getting out a full run in view of difficulties in keeping the right kind of labor on hand.

POTTERS TO INVESTIGATE ELECTRIC KILN

With a shortage of gas and coal fuel evident during the coming winter season, some pottery manufacturers have started to investigate an electric kiln for domestic pottery purposes. A few years ago, J. T. Smith, head of the Smith-Phillips China Co., of East Liverpool, Ohio, investigated the plans of an electric kiln which were advanced by a New York State inventor. At the time no

Erie Revolving Shovels



If there is
one BEST shovel
you want it!

Find out whether there is one shovel that is unequalled for brick yard service. Just ask—

I. L. Stiles & Son Brick Co., of North-Haven, Conn.; ask the Des Moines Clay Co. of Des Moines, Ia., or John H. Ward & Sons Co. of Pittsburg, or the Southern Clay Co. of Sumter, S. C.—The Duffney Brick Co. of Mechanicsville, N. Y.

Ask ANY of the brick yards who are using the Erie and getting record output.

The Erie Shovel will break YOUR output records. It is speed champion. It swings faster. It gets into the digging faster. It is easier to operate—only three levers and one footbrake to control all digging motions. This simple control enables an ordinary mechanical handy man to get big output with an Erie.

Look the Erie over in detail, point by point. Note the long high reach. Note the unequalled strength and power. Larger bearings—stronger construction at every point of wear and strain.

We will be glad to tell you where you can see the Erie working in your neighborhood—and we will send you a copy of our new Bulletin "B." Write:

Ball Engine Co., Erie, Pa.

effort was made to erect such a kiln in the pottery district. It is possible that a successful electric kiln would solve the kiln fuel question among the Ohio and West Virginia potteries, and then the shortage of gas and coal would be only a matter of memory.

ARRANGEMENTS COMPLETED FOR NEW PLANT

Conclusive arrangements have been made by the Virginian Potteries Co., of New Lexington, Ohio, to build a new electric porcelain plant at Huntington, W. Va., on the main line of the Chesapeake & Ohio railway. A five-mile tract of land has been secured, and work on the construction of the plant will begin shortly. As soon as this plant is put into operation the plant now owned and operated by the company at New Lexington, Ohio, will be removed to Huntington, thereby doubling the capacity of the newer plant. The new location, with its cheap natural gas and coal and its excellent transportation facilities constitutes a very favorable solution to the problems of fuel shortage and transportation difficulties met with in Ohio.

NEWS NOTES FROM MANY PLANTS

Highly successful results were obtained from the first kiln of ware burned at the plant of the Antioch (Cal.) Pottery Co., which was recently placed in operation by Messrs. Steiger, Miner and Empena after a period of experimentation which started early in April. Among the articles included in the first burn were large acid jars used in chemical plants, pots for corroding lead, stoppers for acid jars, and a quantity of sewer pipe.

All of the plants of the Crown Pottery Co., the National Pottery Co., and the Helfrich Pottery Co., at Evansville, Ind., are operating to full capacity and employing 400, 150 and 250 workmen, respectively. The one retarding feature of the situation at present, according to Aaron M. Weil, president of both the Crown and National Companies, is the inability to get raw materials on time. No material improvement in this condition is looked for in the near future.

The Summit China Co., at Akron, Ohio, is about finishing the erection of a new office building and warehouse, and the space now used for office purposes will be added to the decorated ware department. The improvement is costing upwards of $20,000 and when completed will add to the capacity of the company, as additions will soon be made to other departments.

Plans are maturing for the erection of a two or three-kiln pottery at Newell, W. Va., which will be confined wholly to the manufacturing of door knobs. There is only one plant in the upper Ohio Valley devoted to this industry just now, this being located at East Liverpool, Ohio. The company is now in process of formation.

George G. Dyer, Trenton, N. J., commissioner of the Sanitary Potters' Association, has been selected by Secretary of War Baker as chief inspector of sanitary pottery equipment to be used by the government at the different military cantonments.

Six kilns have just been completed for the new plant of the Vitreous Products Co., which is being built at Bedford, Ohio, and plans for additional kilns are being worked out by the company. The concern is now in business at Akron, Ohio, and it is likely that they will start operations in the new plant within a few weeks.

The LeRoy (N. Y.) Electric Porcelain Co. has awarded a contract for the construction of four new kilns at its plant, to be ready for operation late in August.

The Trenton (N. J.) Potteries Co. has filed a certified copy of its incorporation articles in Sacramento, Cal.

The Price of Coal

subject to such uncertain conditions as exist at the present time, demands that you keep a watchful eye and an open ear upon this big factor of your operating expense.

The price of coal will not be any lower than it now is, and will undoubtedly go much higher within the next few months, because of the material increase in miner's wages and mining supplies.

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

---

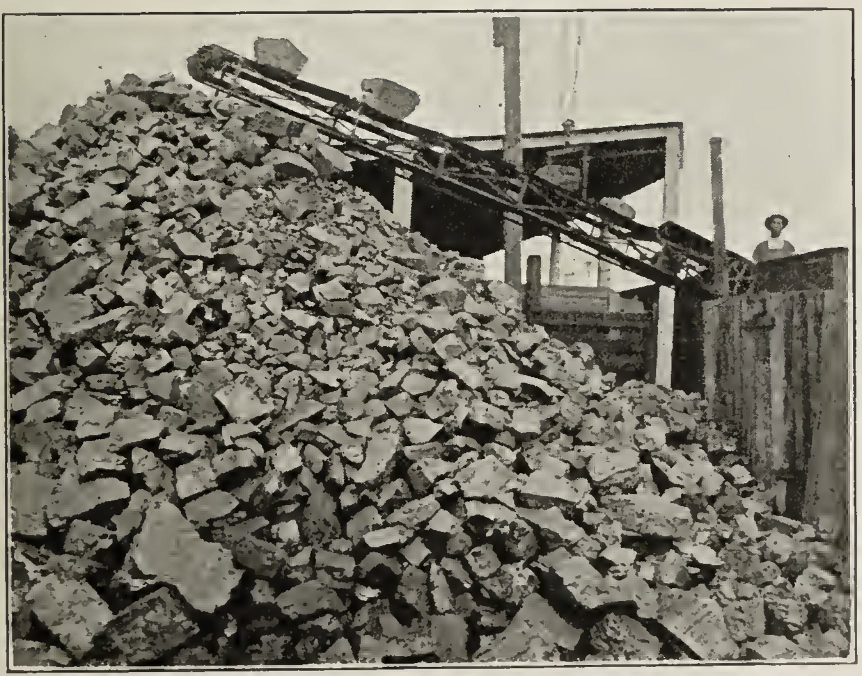
New Type of Portable Conveyor

Coal handling costs must be reduced to meet the rising price of coal; and cost of handling material must be reduced thruout the plant in order to meet the labor situation and all increased costs of operation. It is rather awkward at the present prices to install elaborate conveying systems for handling coal and clay, but in most plants it is almost essential to use labor saving machinery to meet the present abnormal situation.

We find that a type of portable conveyor that has been rather extensively used by retail coal dealers is well suited to the demands of the average brick plant. The conveyor is already being used in some brick plants as well as in factories and power plants under various conditions and with various materials. It is as light in weight as good engineering design permits and yet is rigidly and substantially braced for severe usage. A truss pipe frame is used carrying light steel end pulleys and steel troughing rolls. An electric motor is carried within the frame driving thru cut gears and chain, the operating mechanism all enclosed under suitable guards.

In unloading coal the conveyor eliminates the wheelbarrow and saves handling the coal more than once. The shoveler delivers to the conveyor hopper and the conveyor piles back in the shed or builds up an open pile. For this use the conveyor hangs on an overhead track in the shed or on a wire cable for outside piling. It can be moved about by one man and the current consumption is so low that one man can economically use the conveyor. At the same time the capacity allows as many as six men to shovel to the conveyor at one time.

The conveyor is equipped with a demountable truck on which it can be moved about on the ground or in the clay storage building. In this building it can very profitably be used for reclaiming clay, delivering to a stationary conveyor, leading to the dry pans. The conveyor can also be used for handling finished brick under various conditions. Its portability and its low operating costs are its important features which give it a rather wide range of usefulness in the average plant.



This Type of Portable Conveyor is Well Suited to the Needs of the Average Brick Plant

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—

The hand poked type.

For large installations—

The mechanically stirred producer.

R. D. Wood & Co.

400 Chestnut Street
Philadelphia, Pa.

SAY "I SAW IT IN BRICK AND CLAY RECORD"

The National Guard has been called to the Colors

In a few weeks or a month, another half million men will be drafted—the factories making munitions and supplies for the army will pay higher wages for every man they can possibly get.

What are *You* going to do?

In at least one department you can save men, by installing

Automatic Electric Elevating Platform Trucks

These trucks carry six times as many brick as a man and a wheelbarrow, they move twice as fast as a man, they are always on the job.

Why not prepare now for the draft?

The Automatic Transportation Co.
2933-2965 Main St., Buffalo, N. Y.

Pioneer manufacturers of Electric Storage Battery Trucks, and the only Truck manufacturers awarded Gold Medal at San Francisco Exposition.

In all the newspapers we see warnings by the government officials about a threatened shortage of fuel next winter, and suggesting, almost pleading, that coal be stored now.

The situation is serious, there is only danger in ignoring it. The railroads will be overtaxed severely next winter, the mines—even tho working to capacity, which they will do—cannot supply the demand.

There is only one way out and that is to store a sufficient supply of coal on your yards to serve as a reserve for use when shipments are held up or not forthcoming.

If this plan is adopted, then efficient money-saving methods must be used in order to keep as low as possible the already high price of coal.

The portable conveyor offers a splendid new way for saving time and labor in unloading the coal, enables you to unload the gondolas quickly, place the coal at quite a distance from the track and save tonnage on cars.

This conveyor is being manufactured by the Barber-Greene Company of Aurora, Illinois.

* * *

Amalgamation of Aniline Manufacturers

To patriots and to all thinking Americans the following announcement will be of particular interest. It is a well known fact that the United States has been dependent upon Germany for a large proportion of the various Aniline Dyes. Relief from this condition of dependency is promised, and the United States may soon be entirely independent of all foreign nations for the various Anilines.

The amalgamation of the coal-tar color, intermediate and raw material manufacturing concerns, comprising Schoellkopf Aniline & Chemical Works, Inc.; W. Beckers Aniline & Chemical Works, Inc.; National Aniline & Chemical Co.; Benzol Products Co., and certain plants and properties of the General Chemical Co., the Barrett Co., Semet-Solvay Co., which pertain to this line, has now been accomplished, and the new company, known as the National Aniline & Chemical Co., Inc., will continue the business under one organization.

The object of the new company is to insure the national independence of the United States in the coal-tar products industry, and the aim of the management is to manufacture coal-tar dyes and intermediates which can compete successfully, both in quality and variety, with those heretofore imported.

To the clay products manufacturer the product of this company that is best known is Carbonate of Barytes, which has been marketed extensively in the clay industry under the trade name of Rollin's Barium Carbonate, which is used to suppress the scum producing materials found in some clays.

The offices of the company will be at 244 Madison Avenue (corner 38th Street), New York City, after July 1, 1917.

* * *

S-V Truck Tires

The systematic carrying of freight by motor truck is a distinct economic trend that is being closely watched in the transportation world. To the casual observer the motor truck industry of 1917 seems to have attained to adult proportions. People felt the same way about railroads fifty years ago. To the thoughtful person, however, nothing can seem clearer than that we are now watching only the infantile steps of an industry which contains the seeds of revolutionary growth.

Mr. R. S. Wilson, manager of the Motor Truck Department of the Goodyear Tire & Rubber Co. believes that we are witnessing only the early stage in a development that will vitally change the transportation methods of this country. Says Mr. Wilson: "There are now about 250,000 motor trucks in the United States, engaged in every conceivable kind of service. Without these trucks to relieve the unprecedented railroad congestion, commercial conditions would long before this have become intolerable. Not only is the motor truck facilitating the unloading of freight cars and the transportation of freight to storage houses, but wherever permanently improved roads form connecting links between important business centers, the rubber-tired freighter is competing with the railroad for the short haul business. And in these days of freight congestion, the motor truck is getting all the business it can dispose of.

"Yet there has been little credit coming to any tire manufacturer for the service truck tires have given—and but a small profit. Tire equipment on a truck is even more important than it is on an automobile—there must be a more definite value returned for the expense involved. Business men are pitilessly exacting in their demands of service from motor truck tires.

"Yet we have not hesitated to enter the most difficult fields of commercial hauling with our S-V Pressed-on Truck tire. Mileages exceeding 40,000 in city bus service and over 20,000 in trucking have shown us that we were not mistaken in our estimate of the tire's worth.

"Long mileage, alone, however, is not important. Rubber tires are to cushion the loads. Otherwise steel tires would be used. So, if long wear is attained at the expense of cushioning power, the tire does not serve its primary purpose. It is fortunate for truck owners that the S-V truck tire does not attain its long mileage at the expense of cushioning."

* * *

Motor Truck Drives Generator

Furnishing power for generating the electric light current at the United States Army cantonment, Linda Vista, Cal., has been the work of a Kissel truck for the past week.

Kissel Motor Truck

Trouble developed in the electric lighting system that shut off all power, plunging the Army Post in darkness. A regular stock Kissel truck was attached to the dynamo by a belt, and although stationary no difficulty was experienced from overheating.

* * *

New Homestead Valve Representative

The National Mill Supply Co., of Ft. Wayne, Ind., has been appointed an exclusive representative of the Homestead Valve Manufacturing Co., of Pittsburgh, Pa. The territory assigned is Ft. Wayne and vicinity, in which there are many brick, drain tile and hollow ware plants.

The "HOVALCO" Renewal Blow-Off Valve and the "HOMESTEAD" Quarter-turn Valve are very possibly the two Homestead Valves that the clayworkers are most interested in, and full information can be obtained by writing either the home office of the Homestead Valve Manufacturing Co., or the National Mill Supply Co., at Ft. Wayne, Ind.

* * *

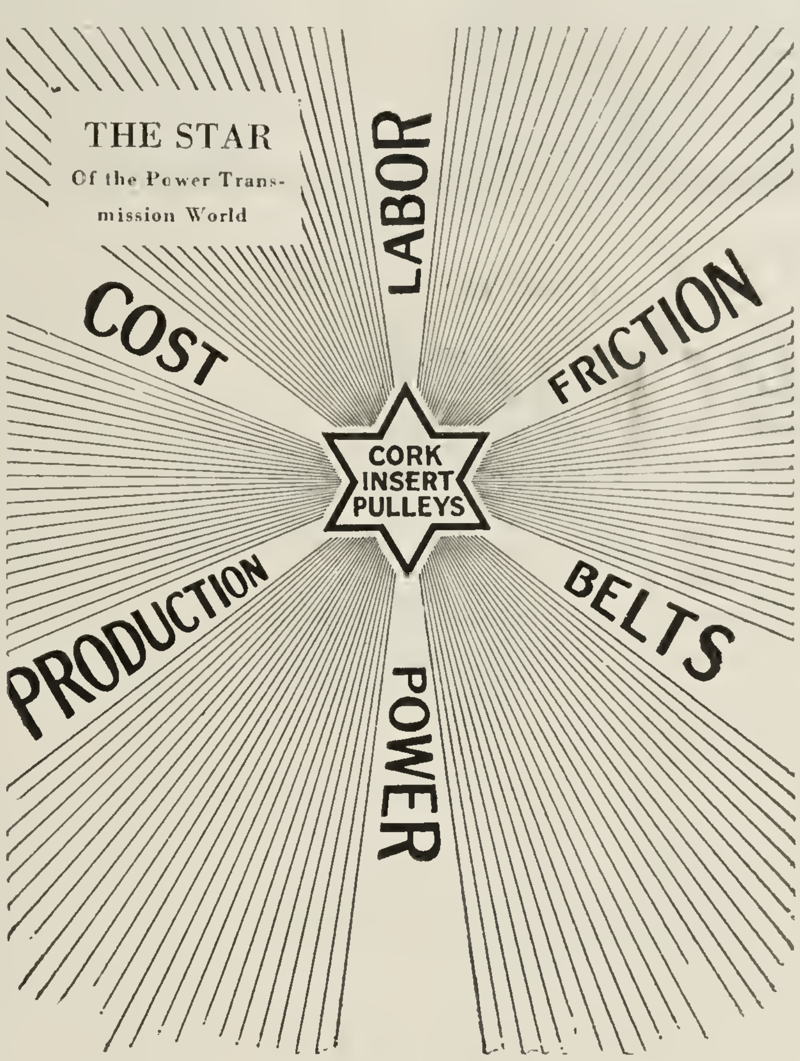
Dryer Thermometers

For a great many years the clay products industry has been using Pyrometers for the measurement of high temperatures in kilns, but seemingly the great majority have neglected to investigate and use thermometers for measuring low temperatures on dryers.

Some few of the plants have, however, pioneered the way and are using the low temperature measuring thermometers with wonderfully good results.

In the same proportion that the understanding and knowledge of burning increases after pyrometers are installed on the kilns, so the knowledge of the proper way to handle or control a dryer, increases after thermometers are installed.

It seems sensible, of course, that the temperature of each tunnel or section of the dryer should be known



The SIX Points of SAVING—

POINT 6 PRODUCTION

You must get production to make your profit

If your belts slip your machines run unevenly or under speed, and production falls. More than likely the quality suffers, the really conscientious help become dissatisfied because their output is curtailed, your costs rise, you have less goods to sell.

WHY STRUGGLE UNDER THESE UNNECESSARY HANDICAPS?

CORK INSERT PULLEYS

will get and maintain the rated speed all the time. They make certain the largest and most uniform production whatever your special line and however unfavorable the conditions.

WRITE US TO SHOW YOU how Cork Inserts will take care of *your* particular requirements and increase *your* production.

THE SLIP-STOPPING PULLEY

The Cork Insert Co.
168 Federal Street
Boston, Mass.

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.20
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.25
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scumming and Efflorescence	.50
Seger's Collected Works	3.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, Book Department,

Brick and Clay Record
445 Plymouth Court, Chicago, Ill.

Brown Recording Thermometer for Dryers, Which is Placed on Thirty Days' Trial

accurately at all times in order to avoid and to accomplish a great number of things.

Avoidance of an excess of heat in the dryer may result in a minimum amount of checks and cracks in the ware, if the dryer is furnace fired it results directly in a saving of fuel.

On the other hand it is patent that the avoidance of too small an amount of heat, produces well dried ware.

Too much heat or too little, are evils that usually are attended by poor results, and poor results from the dryer are costly.

Incomplete drying retards the burning operation, requires more time, fuel and labor to finish the kiln, the damp brick also are easy to check and crack, and are subject to insufficient oxidation, producing swelled ware.

It is plain that the thermometers furnish a means to perfectly control the heat flow and to produce bone dry ware in the cheapest, shortest way possible.

The Brown Instrument Company of Philadelphia, Pa., have now produced a perfected thermometer for dryers which has been added to their regular pyrometer equipment. A free trial for thirty days is offered by the company, the thermometers to be returned if not satisfactory.

* * *

Coal Economy Chart

A very interesting and instructive circular has just been mailed by the Cyclone Grate Bar Co., of Buffalo, N. Y., giving information pertaining to the savings that can be secured by using better boiler grates.

A chart designed by W. P. Schaphorst, the famous engineering expert, enables you to determine by use of a straight edge, whether it would pay in your individual case to install Cyclone grates. A discussion also accompanies the chart which enables you to prove to yourself in another manner the economy that you can obtain—the only facts necessary to be known are: your grate area, and the price of your coal.

Thus you can easily determine the answer to the old question, "Can I save money by installing shaking grates?" The chart will be mailed to those requesting it.

* * *

The Walter A. Zelnicker Supply Company and affiliated companies are now represented in the Birmingham district by Mr. Thomas A. Hamilton, who for the past fourteen years has been connected with Crane Company, prior to which he was superintendent of the East St. Louis Plant of the Zelnicker Car Works. Mr. Hamilton will have charge of both buying and selling in the southeastern territory. Mr. Hamilton's office will be at 1018 Woodward Bldg., Birmingham, Ala.

American Clay Machinery Co. 259, 261
Armstrong Mfg. Co....246
Automatic Transportation.252

Baird Mach. & Mfg. Co....241
Ball Engine Co....199
Barber-Greene Co....202
Beighlee Electric Co....244
Bell Locomotive Works....238
Bonnot Co....188
Bristol Co....243
Broderick & Bascom....235
Brown Instrument Co....195
Buckeye Traction Ditcher Co....254

Canton Grate Co....245
Celite Products Co....234
Ceramic Supply & Cons....238
Chambers Bros. Co....191
Chase Fdry. & Mfg. Co..267
Clapp, Norstrom & Riley.274
Clarage Fan Co....232
Classified Ads....272, 274
Cleveland Alloys Co.... 79
Cling-Surface Co....251
Cork Insert Co....Front Cover
Crescent Belt Fastener....233
Crimora Manganese Co....233
Cyclone Grate-Bar Co....242

Didier-March Co....270
Duplex Truck Co....237

Eagle Iron Works....234
Eastern Mchy. Co....198
Elwell-Parker Electric Co.237
Engelhard, Chas....197
Exner, J. E....247

Fate Co....275
Forester, H....247

Gandy Belting Co....257
Garnet Company....263
General Electric Co....201
General Store....263

Hardinge Bros., Inc....233
Harris Bros. Co....273
Hendrick Mfg. Co....267
Hettrick Mfg. Co....249
Homestead Valve Mfg. Co263
Hook Patent Kiln Co....250

Illinois Boiler Cleaning Compound Co....235
International Clay Machinery Co....192, 193

Jackson & Church Co....256
Jenkins Bros....241

K-B Pulverizer Co....232
Keystone Driller Co....236

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other Tuesday by

Kenfield-Leach Company
445 Plymouth Court Chicago

Chicago, July 31, 1917
Vol. 51 No. 3

Leading Articles in This Issue

Ceramists Hold Profitable Meeting 206
Refractory Brick—Their Properties and Constituents 211
Barnes Stays on the Job....215
Proper Draft Control in Burning Kilns 220
Why Not Knock?....224
Tentative Specifications for Burned Clay Sewer Pipe....226
Rate Fundamentals and Tariff Interpretations 230

* * *

The Editor's Corner....205

* * *

Special Departments

Machinery and Equipment....255
Pottery Notes....249
Questions and Answers....234
The Superintendent....231
Wake of the News....237

Lakewood Eng. Co....253
Link-Belt Company....200

Main Belting Co....189
Manufacturers Eq. Co....190
Marion M. Fd. & S. Co..234
Marion Steam Shovel Co..243
Mathews Gravity Carrier..269
Morgan Co., F. W....232

New England Fire Cement Co....248

Ohio Filler Shield Co....239
Ohio Galv. & Mfg. Co....268
Orenstein-Arthur Koppel Co. ....25[illegible]
Osgood Co....267
Owens Continuous Tunnel Kiln Co....263

Philadelphia Textile Machinery Co....196
Potts & Co....232
Price Electric Co....240

Quaker City Rubber Co....271

Randall Graphite Sheet Lubricator Co....232
Roessler & Hasslacher....240
Rollin Chemical Co....239

Sander Instrument Co....235
Sanderson-Cyclone Drill....233
Sauerman Bros....232
Sawyer Belting Co....268
Scandinavia Belting Co....246
Schofield-Burkett Cons....269
Sero Specialty Co....235
Service Motor Truck Co..194
Smith Co., Claude....187
Standard Dry Kiln Co....244
Sturtevant Mill Co....276
Stupakoff Laboratories....234

Taylor Instrument Companies....249
Thew Auto. Shovel Co....271
Thwing Instrument Co....242
Trautwein Dryer & Engineering Co....187

Union Chain & Mfg. Co..232

Veritas Firing System....247
Victor Balata & Textile Belting Co....267

Watt Mining Car Wheel..236
Webner, F. E....263
Weller Mfg. Co....186
Wood & Co., R. D....255

Youngstown Steel Car....245

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

Extra! In Next Issue—

¶ The winner in the Second Ceramic Students' Essay Contest will be announced. This contest was conducted among the ceramic schools of the country by BRICK AND CLAY RECORD with a view toward promoting interest in the production of valuable ceramic literature. The winner will be awarded a complete set of the Transactions of the American Ceramic Society, bound in cloth, and valued at more than one hundred dollars. Watch for this next issue! See who the winner is!! The winning paper in this contest will also be published!!!

¶ "The Labor Factor in Setting Terra Cotta Kilns," by R. W. Bauhahn, is an article that will interest terra cotta manufacturers, while G. W. Greenwood's story, entitled "Analysis of Sales Plays a New Role," will furnish interesting, profitable and entertaining reading, not only for fire brick makers but for all clay product manufacturers.

¶ The story of what one Illinois town is doing in the way of a progressive brick paving program will also have a place in the August 14 issue, and we will try to get in "Talk Service," by Bernard W. Figgins, of the Hydraulic-Press Brick Co., which had to be omitted from the July 31 issue because of lack of space. This is the other of the two papers submitted in the Sales Ethics Contest which received honorable mention. Mr. Smith's paper, "Why Not Knock?" is published in this issue.

¶ It may be warm, but then, this is the good old summer-time and we should expect some high temperatures. However, we must make money, no matter how hot it is, and a very good way to both make and save money is to read BRICK AND CLAY RECORD regularly. Don't miss an issue. It may cost you some cash.

The EDITOR'S CORNER

How Shall We Meet the Draft?

WITHIN A FEW MONTHS approximately five hundred thousand men, between the ages of twenty-one and thirty-one, will be taken from the business and industries of this country to form the back-bone of our New National Army. A little later, if the war continues, another five hundred thousand will be drafted, bringing the conscripted army up to the strength of one million men, and then, our national leaders tell us that, if necessary, another million men will be taken. Therefore, according to present plans, a maximum number totaling two million may be pressed into military service to put the "kibosh" on Kaiser "Bill." This means that one out of every five men between the ages above mentioned may be transferred from the shop, the store, the factory, or from work in the great out-of-doors, to the serious business of winning the war.

As one writer puts it, this drain upon the nation's labor supply would not be noticed in normal times, but since the flow of laborers and tradesmen from Europe fell off 891,780 from 1914 to 1915, and 28,474 from the last mentioned year to 1916, the raising of a new army will present a serious problem to employers the country over. Further than this, government plans for speeding up the production of munitions of all kinds, equipment for the army and navy, as well as shipbuilding, will make heavy demands upon the available supply of labor.

Clay products manufacturers have already felt the effect of numerous enlistments from among their employes, and they have been made very conscious of a shortage in the labor market, due to the enormous demands of other industries made prosperous by the war. Now reports are coming from every hand, of men working in and about clay plants who will be subject to the first draft. This condition as well as the corresponding situation in other industries which will affect the labor supply the country over, makes it necessary for every clay products manufacturer to take immediate steps to meet the impending unparalleled shortage.

The suggestion has been advanced that since one out of every five men of the draft age may be taken, the other four should be patriotic enough to be willing to work enough harder to make up for the man who has been drafted. Experience among employers, however, has been that most men are not willing to do this under any consideration. This would undoubtedly be true of the greater part of the clay plant employes. As one clay products manufacturer told the writer the other day, the more a man is paid for his labor, the less he seems to be willing to do, so that the above mentioned suggestion will probably hold little of encouragement for the manufacturer who is anxious to meet the problem of keeping his plant running to capacity.

What will have to be done is this: Every manufacturer must become an industrial engineer in greater or less degree as his ability will permit. He must begin thinking, and that right away, about different ways whereby he can cut out lost motion and reduce unnecessary operations to a minimum. It is a rare plant indeed where the judicious use of a little common sense will not make it possible to save some labor.

Brick and Clay Record has published in the past year some very excellent articles dealing with efficiency about the clay plant. Among such articles were those contributed by Dwight T. Farnham, an able industrial engineer, covering in considerable detail his experience in the clayworking industry as an efficiency expert. These articles are now being placed in book form, and are available to all clay products manufacturers who are anxious to make a thoro study of their own factory with a view toward meeting war conditions in the labor market.

Most articles, setting forth personal experiences in cutting costs and reducing lost motion, which are printed in *Brick and Clay Record* cannot be taken bodily and applied to other manufacturers or plants, except in rare cases. These articles are published to promote and suggest new ideas to the reader. That is the function which Mr. Farnham's articles embodied in the book "Scientic Industrial Efficiency" are intended to perform.

The Industry Is Making Big Strides

WHILE one occasionally sees a poorly arranged and inefficient clay plant in his travels about the country (if he has occasion to travel very much) we believe that the majority of factories where clay and other ceramic materials are made into superior wares, are something of which the industry may well be proud. The past few years, especially, a number of excellent plants, modern in every respect, have been erected, while many old establishments have been rehabilitated.

However, the writer was agreeably surprised in visiting a new refractories plant recently, to see to what extent modern devices and highly efficient machinery are now being employed. In equipping this factory the country was combed for the very best of everything.

Such signs as this should cause each and every clay products manufacturer to rejoice in the knowledge that he is part of such a rapidly growing and progressive industry.

CERAMIC SOCIETY *Holds*

A Quartet of Delegates at the Entrance to Watkins Glen. The Figure at the Extreme Right is None Other Than Our Beloved Friend, A. V. Bleininger

With the Stage Set Among the Hills and Lakes of the Empire State, the Nineteenth Summer Gathering of the American Ceramic Society, Planned by Ross C. Purdy, L. E. Barringer and Arthur S. Watts, Was a Happy Mixture of Plant Inspection and Sight-Seeing in a Part of New York That Is Famed for Its Scenic Attractions and Recreation Spots.

THE HOSPITALITY of Prof. Chas. F. Binns, director of the New York State School of Clay-Working and Ceramics, as well as that of the good natured, genial broad-gauged and progressive Gregory of Corning, coupled with the tireless energy of Ross C. Purdy, of the Norton Co., made the nineteenth summer meeting of the American Ceramic Society a gathering that will not soon be forgotten—at least so far as ceramists engaged in clayworking, who attended the meeting, are concerned.

The program, which was arranged at some personal sacrifice in both time and money on the part of Ross Purdy, as chairman of the arrangement committee, was a happy mixture of visits to clayworking, glass, enameled iron, and other plants, with recreation and sight-seeing in a part of New York state that is famed for its scenic attractions.

The meeting, which was held at Hornell, Alfred, Corning, Canandaigua, and Rochester, New York, from July 16 to 20, was not only a success so far as quality of the program was concerned, but it was also well attended, something over fifty signing the official roster. This attendance was equally as good, if not a shade better than at the St. Louis meeting last year. However, fewer clayworkers were in evidence at the 1917 meeting, the larger part of the gathering being composed of scientists engaged in other ceramic fields.

Not more than twenty-five members assembled at the Sherwood Hotel, Hornell, on the evening of Monday, July 16. The next day, however, more delegates arrived and they kept coming in every day as the party progressed from town to town until more than fifty had signed the roster at the end of the journey. Prof. Binns met the ceramists as they gathered on Monday evening, telling them what the next day had in store in the way of interesting sight-seeing and laboratory inspection. The evening was also well spent in getting acquainted and in registering.

VISIT ALFRED

Rising at a fairly early hour, the technical "army" descended upon the New York State School of Clay-Working and Ceramics via motor bus the next day, there to be shown about this famous college and campus. This being the season of the year when students are accustomed to absent themselves from their studies for a period, only a vacation school in pottery was found in session. But, since the students in the ceramics school were, for the most part, of the feminine variety, the fact that there were no large classes to be seen in session or at work in the laboratories, made not a particle of difference to the visitors, especially one—Ross Purdy. The ladies took great pleasure in showing the ceramists around and in explaining to them the work which they were doing. Besides, they were a very important factor in the success of that part of the program which was soon to follow—namely luncheon. Prof. Binns and Joseph B. Shaw, his assistant, took the lead in making the party feel at home and in guiding the visitors about the ceramics building, which was erected in 1900—now seventeen years ago—at a cost of $11,000 for the main part. Professor Binns is authority for the statement that the same structure could not be built for three times that sum now. A little latter in the day, Boothe Colwell Davis, president of the college, in a short and informal talk to the guests, threw some in-

PROFITABLE MEETING

teresting side-lights upon the founding of the clayworking school at Alfred, and the debut of Prof. Binns as instructor therein. Dr. Davis told of his efforts in getting the state legislature to make the necessary appropriation for the new work and how he succeeded in securing the support of Theodore Roosevelt, who was governor at that time. Prof. Binns was secured thru a member of the American Ceramic Society who was also a close friend of Dr. Davis.

Waiting for Lunch. Some of the Party That Visited the New York State School of Clayworking and Ceramics Decorating the Entrance to the Main Building

PROF. BINNS' COLLECTION OF ART STONEWARE

The inspection of the school was most thoro. The visitors were started at Prof. Binns' office on the first floor, and they ended with a studio and lecture room on the third floor, having taken in the basement en route. Prof. Binns showed the ceramists his wonderful collection of art stoneware, in the production of which he has spent a number of years. Some of the effects obtained resemble very closely ancient Chinese patterns.

The visitors found the school's equipment very complete, and holding much of interest. The laboratories are spacious, and the clayworking machinery of an unusual size. It was explained that the size of the machinery was due to a desire to obtain working conditions as practical as possible.

While the members of the society were busy climbing stairs and walking about, the ladies quietly arranged a very appetizing luncheon, for which the visitors were well prepared when they had finished their trip of inspection. Tables and chairs had been placed on the campus which the ceramists were invited to occupy. This they did very gladly, scattering themselves among the ladies. The sandwiches and coffee had hardly been passed when the sky began to "weap" great "tears," sending all scurrying for cover with a plate in one hand and a camp chair in the other. The ceramic school building was reached without any serious accident and without any one getting very wet, and the luncheon was finished without interruption.

After luncheon the party lingered for a short time, thanking Dr. and Mrs. Davis, Professor and Mrs. Binns, as well as Miss Elsie Binns, Mr. and Mrs. Shaw, and especially the ladies, for the kind hospitality and entertainment extended to them. A number of visitors (former students of the New York State School of Clay-Working and Ceramics) spent a few moments renewing old acquaintances about the campus and about town. After visiting was over the party left for Hornell, and from there went immediately to Corning.

GREGORY SHOWS THE "BOYS" A GOOD TIME

M. E. Gregory, proprietor of the Brick, Terra Cotta & Tile Co., had joined the party at Alfred, accompanying it to Corning, where the ceramists put up at the Dickinson House.

After dining, they went in a body to Mr. Gregory's new brick home (Mrs. Gregory had gone to the country),

THESE GENTLEMEN MOTORED FROM HORNELL TO CORNING

Not the Least of the Enjoyable Features of the Meeting Were a Number of Motor Trips Generously Offered to Various of the Delegates by O. C. McCormick Who Brought His Automobile from the "Sixth City." Some of the Tourists Are Shown in the Accompanying Illustrations.

From left to right: O. C. McCormick, Chief Engineer, Clayworkers' Equipment Company, Akron, Ohio; A. S. Walden, National Carbon Co., Cleveland, Ohio; M. F. Beecher, Norton Co., Worcester, Mass., and R. Guy Cowan, Cowan Ceramic Laboratory, Cleveland, Ohio.

where he entertained them for an hour or so and showed them around the house, for which he made the brick—a rough-textured, red face brick, laid in yellow mortar joints, cut flush. This home is certainly an appropriate abode for its brick-maker owner. It is located at the top of a rather high hill, commanding a rare view of the town below. It is not only built with brick, but the walks around the building are also laid with burned clay. It has a beautiful brick fireplace in the living room, in the manufacture of which ground glass mixed with the clay has been used, giving the brick a mossy appearance. A noteworthy feature of the interior decoration is the very unique and cozy den which offers an inviting retreat for the head of the house. The woodwork in this room is of cypress, sent specially to Mr. Gregory from New Orleans by his good friend, Fritz Salmen. A detailed description of the house would hardly be in order in a narrative of this character, and so we must pass quickly on. Suffice it to say that the building is typical of the progressiveness and energy of its owner. Two views of the house are shown in the accompanying pages.

INFORMAL BUSINESS SESSION

From Mr. Gregory's home the party went to the Corning Club, where the ceramists were the guests of Mr. Gregory and Frederic Carder, manager of the Steuben Glass Works. An informal business meeting of the society was held in a room in the club, and many interesting and vital topics pertaining to the welfare of the society were discussed. The matter of increasing the membership was given considerable attention. The point was well made that the society could just as well have a thousand members as five hundred, and this increase was perfectly possible as it only meant each member bringing in one new member. A larger membership is essential to the further growth of the society, as it is planned to engage a paid secretary just as soon as the necessary additional financial support is forthcoming. A paid secretary—one who could put in his entire time looking after the organization's affairs and edit the transactions—is a very much needed addition. Also the matter of increasing membership fees was discussed, some feeling that fees ought to be raised, especially the associate members' dues. The suggestion was offered that both active and associate members be required to pay ten dollars per year as their contribution to the society's financial needs.

The matter of a junior membership, which would entitle the holder to receive announcements and reports of the various meetings, was also touched upon. This is a question that has received some attention at previous sessions and will probably be brought up again at a later date, possibly at the next annual meeting.

Three Very Earnest Seekers After Knowledge from the Land of the Rising Sun—T. Kurahashi, Mitsun Co., New York, N. Y.; Seiji Kondo, Tokyo Higher Technical School, Tokyo, Japan, and K. Ide, Asaki Glass Co., Tokyo, Japan

HOW "BRICK AND CLAY RECORD" IS HELPING

At the suggestion that the trade press co-operate with the society in securing new members, the Editor of *Brick and Clay Record* called the society's attention to the work that has and is being done by his publication along this very line. It will be remembered that last year *Brick and Clay Record* staged its First Ceramic Students' Essay Contest, in which a prize was offered to each ceramic school in the country participating, the prize (which was a paid associate membership in the society) being awarded

The plant of the Brick, Terra Cotta and Tile Company, Corning, N. Y. To the Right of the Factor to the author of the best paper from each school, dealing with a clayworking subject. Two schools took part in this contest, the University of Illinois, and the Iowa State College, and one student from each of these schools was awarded a paid membership. This added two members to the society and it stirred up some interest in the value of membership in the society.

This year *Brick and Clay Record* conducted its Second Ceramic Students' Essay Contest, offering this time a complete set of the Transactions of the American Ceramic Society, valued at more than one hundred dollars. The result of this contest will be announced in the next, or August 14, issue of *Brick and Clay Record*. The Editor was glad to be able to offer further assistance to the society in obtaining new members.

The issuing of the Transactions in installments instead of one volume was talked over, many being in favor of the first mentioned plan, even tho it entailed a greater publishing cost. The concensus of opinion was that more attention would be paid to the valuable papers printed in the Transactions, and probably a greater percentage of the membership would read the papers, if they were received in smaller doses.

ROLL CALL LIVENS UP MEETING

An account of this particular session would not be complete without some word concerning the snappy roll call introduced by Ross Purdy, and "sprung" upon the party at various stages of the five days' meeting. In pulling off this "stunt" every one was required to rise to his feet, give his complete appellation (middle name, please), tell his connection, and town from which he came, and something about the business in which he is engaged. This "stunt" served to impress upon the minds of all, the name of each and every delegate, as well as some interesting information concerning him.

After "Mac" (otherwise known as O. C. McCormick, from the best city in America) had been delegated to receive the "bad news," so called, and as treasurer of the occasion collected from each member his share of the expense for the evening's refreshments, the meeting was adjourned and the ceramists repaired to the hotel for a good night's sleep, preparatory to the activities of the coming day—not, however, before it was decided to send Prof. Orton, who is now in the quartermaster's department of the United States Army in Texas, a message of greeting, expressing the wish of the members assembled for his continued success in the capacity in which he is serving his country.

FREDERIC CARDER—THE ART-GLASSWARE-MAGICIAN

The Steuben Glass Works was the first plant to be visited on the following day, Wednesday, July 18. Frederic Carder, manager of the company, proved an exceptional host. He conducted the party to the stock room first, where all feasted their eyes upon the wonderful display of art glassware which this plant manufactures. Words can hardly describe the sight which greeted the ceramists. It is very doubtful if more than a few of the visitors had any idea of the possibilities of glassware as a subject for artistic treatment. All of the colors of the rainbow were seen in the ware displayed on the tables, and some of the pieces rivaled the goldsmith's art in their beautiful color effects and delicate shapes. Even reproductions of various fruits were seen. In all of the ware no color was put on by brush, all being a part of the chemist's magic—and this chemist is none other than Mr. Carder himself.

As a boy, he had been introduced to the clayworking industry in his father's pottery in England, where he learned to thoroly dislike the work of fashioning vessels from clay. By force of his own ambition he succeeded in leaving the pottery business as a young man and entered the glass industry. He is reputed to have taught the first glassmaking class in England. In 1903 he came to America, investing in a small plant situated where his much larger factory is now located. With much thrift and hard labor he has built up a prosperous and constructive business. Mr. Carder is a self-made man in every sense of the word. If he inherited any genius, he has made the most of it. One of his outstanding characteristics is that of learning things himself. He has struggled thru many years in gaining a complete knowledge of ceramic chemistry, as well as of art. Mr. Carder as an artist has exhibited in the Royal Academy, London, which speaks well for his ability along this line.

After spending some time in the stock room, the ceramists inspected the plant, watching all of the processes in the manufacture of art glassware, with the exception of the blowing, which department was not in operation, due to the renewal of a glass tank. This tank, which had failed because of only one small defect, has a remarkably well preserved crown. The silica brick in this cap have been

the Chemung River, on Whose Opposite Bank Appear the Buildings of the Corning Glass Works in service for seven years, and will see five or ten more years of hard usage. It might be said that the tank of which this cap is a part has been in continuous service for seven years, without the fire having been extinquished.

Prof. Chas. F. Binns, Mrs. Binns and Miss Elsie Binns

INSPECT CORNING GLASS WORKS

Shortly before noon the party left the Steuben Glass Works and walked to the Corning Glass Works, of which Dr. Eugene C. Sullivan is one of the chief executives. Dr. Sullivan was formerly of the United State Bureau of Standards, and scientifically stands very high in the glass industry. The Corning Glass Works is a tremendous concern, probably the biggest industrial enterprise in Corning, and is undoubtedly the biggest glass plant of its kind in the country. It is said to employ in the neighborhood of 2,500 persons. Within its walls are made electric light bulbs, lantern globes, railroad lamp lenses, glass tubing, and a particular brand of chemical glassware known as "Pyrex."

After "knocking off" for lunch, the party visited the Brick, Terra Cotta & Tile Co., of which Mr. Gregory is the proprietor. Assisted by Alfred Maltby, Mr. Gregory conducted the party about his plant, showing it many interesting features. This plant has fourteen round down draft kilns and seven terra cotta kilns. While the visitors were there, wire-cut-lug paving brick were being made, of which the plant has a capacity of from twenty-five to thirty thousand daily. Wire-cut-lugs are a new product with this concern, it having formerly manufactured only repressed pavers. Other clay products are made by this concern, among which may be mentioned acid-proof brick, side-walk brick, special brick for paving railroad station platforms, and a few face brick. However, the company is perhaps best known by the terra cotta end of its business. It manufactures five thousand tons of that product annually. Mr. Gregory is a veteran in the clayworking industry, having been engaged therein for some twenty-seven years. He is a familiar figure at every convention and needs no introduction to our readers.

Following the inspection of Mr. Gregory's plant a party of ceramists went to the Hawks Co., at Corning, where the visitors saw cut glassware being made. Another group went to Horseheads to visit the brickyard of Mr. Eisenhart at that point.

CERAMISTS ENTERTAINED AT DINNER

In the evening the entire party was entertained to dinner at the Corning Club by Messrs. Gregory, Carder and Sullivan. Mr. Gregory had plucked a large quantity of roses from his own beautiful gardens with which to decorate the tables, and the chef did his best in the preparation of a very excellent meal. When the coffee had been finished, the roll call was "sprung" again, accompanied by some very clever repartee. It was a very enjoyable occasion, everyone doing justice to the dinner and feeling in the best of spirits for the informal program that followed. Before returning to the hotel, the hosts at Corning were thanked by Ross Purdy as leader of the party, and by all of the guests with a rising approbation.

Since a trip to Watkins Glen was scheduled for the first thing the following morning, the visitors hastened back to the hotel to get some rest before taking an early train.

As it had traveled from Hornell to Alfred, back again, and from Hornell to Corning, a small group of five or six of the ceramists motored to Watkins, and as one of the party, the writer wishes to congratulate the State of New York upon the beauty of its scenery in that particular section.

PARTY ADMIRES BEAUTIES OF THE GLEN

The trip thru Watkins Glen was thoroly enjoyed by everyone. For those to whom the spot is not familiar, it might be said that the village Watkins was named after its founder Dr. Samuel Watkins, a native of England. After passing from Indian ownership, thru several hands to the Andrew H. Green estate of New York City, the tract was purchased by the State of New York, and is preserved by the state in its natural condition, being kept open free of charge to all mankind. It is a very beautiful spot. Watkins Glen, worn thru the Portage and Hamilton Groups, is a deep treacherous canyon with cliffs from one to three hundred feet high, cut thru the rocky strata of Glen Mountain, in an easterly and westerly direction, by a stream of

(*Continued on Page 250.*)

This Is the House That Gregory Built—and It's a Dandy. Brick, of Course, Red Rough Textures Laid in Wide Yellow Mortar Joints, Cut Flush

REFRACTORY BRICK—THEIR PROPERTIES *and* CONSTITUENTS

A Simple Exposition of the Chemical Composition of Refractories Written to Reach the Plant Superintendent

Staff Article

¶ Much has been written about the manufacture of refractory products, such as silica, chrome, bauxite, magnesite, and fire clay brick, but very seldom has there been an attempt made to explain the chemistry of their manufacture and the chemical composition of the finished product.

¶ Physical chemistry, that branch of science which treats of the fundamental laws and principles governing the inherent properties of material substances, plays an important role in refractories manufacture. Altho few will claim anything but a vague and indefinite knowledge of the subject, it is nevertheless one of great importance.

¶ It is the purpose of this article to explain in as simple language as possible how and why we are compelled to turn to this branch of science to obtain our refractories, and to make clear to the laymen in simple language the chemistry involved.

IN MAKING silica brick we note that it is common practice to use 98 per cent. of crushed quartzite rock with 2 per cent. lime as the constituents. Let us investigate the individual and collective properties of these two ingredients. The main constituent of quartzite rock is, of course, silica. A typical rock will, on the average, analyze approximately 97 per cent. of silica, the other ingredients being less than 1 per cent. of each of the following materials: alumina, iron oxide, magnesium oxide, alkalis, and water. Since the quantity of these materials, which are impurities, is small neither their composition and properties nor their effect on the silica brick is very important.

Silica, the main ingredient in both the raw rock and the final brick, is the material upon whose properties depends the value of the brick. A typical analysis of a silica brick reveals the following:

Silica (SiO_2)	96.25 per cent.
Alumina (Al_2O_3)	0.88 per cent.
Iron oxide (Fe_2O_3)	0.79 per cent.
Calcium oxide (CaO)	0.80 per cent.
Magnesium oxide (MgO)	0.14 per cent.
Alkalis (K_2O, Na_2O)	0.39 per cent.

The physical properties of silica are very peculiar, this material possessing several different forms which are stable at different temperatures. The important crystal modifications of silica are: quartz, tridymite and cristobalite, each of which have two forms known as the alpha and beta forms. Any one of these three modifications may be converted into either of the others by appropriate heat treatment. Thus at about 870 degrees Cent. (1,598 degrees Fahr.) we get a change from the quartz to the tridymite phase. At ordinary temperatures each mineral exists only in the alpha phase changing into the beta phase as the temperature is raised.

The alpha to beta transformations are all rapid while considerable time is required for the change of one mineral into the other, as, for instance, a change from quartz to tridymite. In the presence of a flux such as calcium oxide, iron oxide, etc., when any form of silica is heated a sufficient length of time below 870 degrees Cent., quartz is always formed; between 870 degrees Cent. and 1,470 degrees Cent. (3,678 degrees Fahr.), tridymite, and from 1,470 degrees Cent. upward to the melting point of silica, cristobalite is formed. When silica is heated without the presence of a flux the changes are somewhat different, but since we always have some flux present in silica brick, these changes need not be considered.

CHANGE IN DENSITY ACCOMPANIES TRANSITION

The effect of the transitions from one state to another is very marked. The density of the different forms of silica are approximately:

Quartz	2.65
Tridymite	2.30
Cristobalite	2.30

This means then, that if we heat quartz above 870 degrees Cent., we get a transformation from quartz to tridymite with an accompanying change in density from 2.65 to 2.30. The effect of this is at once apparent since it is evident that such a change in density causes a change in volume. This may be made clear by taking a kernel of pop corn which for convenience we will say has a weight of one, per unit of volume. Now, if we heat this kernel and cause it to "pop" it will occupy a larger space or volume, yet its weight will be the same as before. Hence, the weight per unit of volume will be less. The changes which a silica brick undergoes in burning are analogous to the above and it is for this reason that they are made smaller in molding so that upon expanding in burning the brick will assume its true size

In silica brick there are two distinct types of expansion which should not be confused. One is the true thermal expansion which practically all bodies undergo upon heating while the other is due to the change in form of the mineral or crystal. The thermal expansion is only temporary just as in most all bodies, but the expansion due to the change of one mineral form to another is permanent, as long as the mineral exists in that particular state. In burning a silica brick care should be taken to get the brick to its highest point of permanent expansion, otherwise the brick when placed in the furnace will expand by small increments upon each additional heating.

The inability of a silica brick to withstand rapid temperature changes is closely connected with its expansion upon heating. In burning silica brick in the kiln care must be taken both in the heating and cooling to get even and slow changes in temperature. By quick burning in the kilns you may get double the normal amount of expansion, but sound brick are not obtained. This excessive expansion is due to minute fissures or cracks in the body of the brick very similar to those which appear in a piece of glass that has been heated red hot and then suddenly plunged into cold water. It is in the early stages of firing that the heat must be raised very slowly because of the chemical and physical changes that are taking place in the brick. If the brick is cooled too rapidly, it becomes friable, and may crack or spall. All underburned brick are less likely to spall but when placed in the furnace and heated expand excessively. Much of this expansion is of a permanent character and a condition of this sort would, of course, harm the furnace in which the brick are used.

PROPERTIES OF CALCIUM OXIDE

The properties of calcium oxide, generally known as lime, are not nearly as complex as those of silica. It serves as the bonding material holding the silica brick together in the dry state as well as in the burned state. Lime itself is a very highly refractory material, but cannot be used as a refractory material because of its other properties, such as slacking in air, spalling, etc. A mixture of lime and silica will melt at a lower temperature than either the lime or silica alone. A curve representing the melting points of various mixtures of these two constituents would be approximately as shown in Fig. 1.

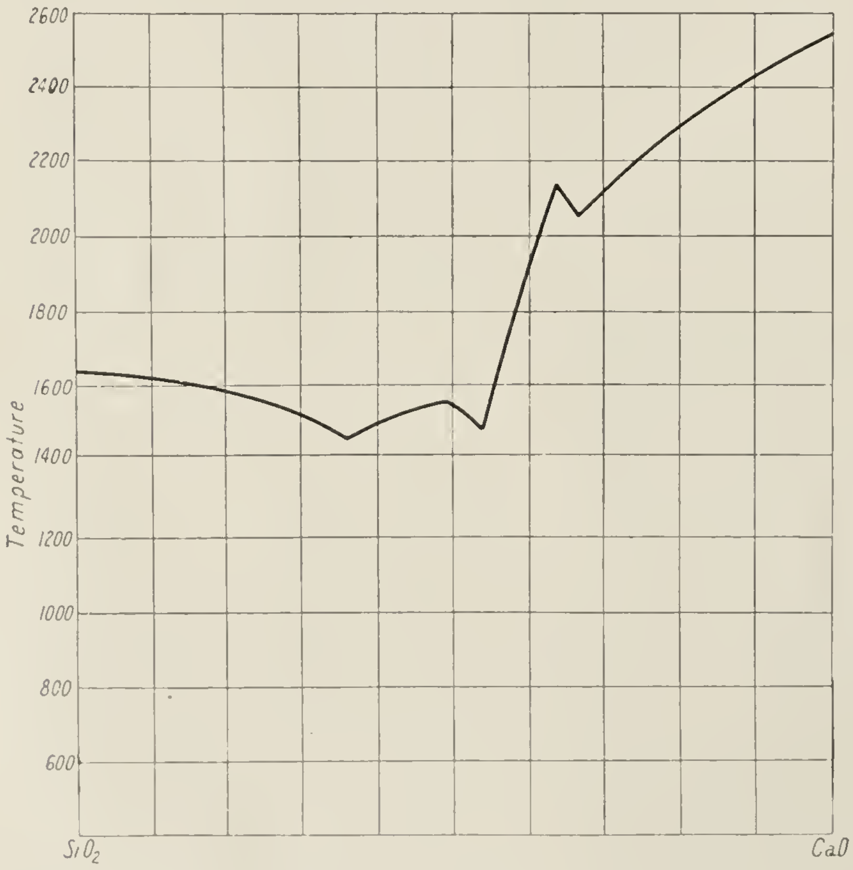


Fig. 1. Showing Effect of Increasing the Amount Lime Added to Silica Upon the Melting Point of the Mixture. The Silica (SiO_2) Decreases from 100 to 0 Per Cent. from Left to Right, While the Lime (CaO) Increases from 0 to 100 Per Cent. In the Same Direction

From this curve it is seen that by increasing the lime content up to a certain point you lower the refractory qualities of the brick. On the other hand, if too little lime is added the bond is insufficient and the brick are weak. Practice has found that the limits are 1.5 per cent. to 3 per cent., with a content of about 1.8 per cent. giving the best results. The first function which the lime performs is to act as a mortar for the brick in the green state. It is probable that some of the same chemical reactions take place here as in the case of sand-lime brick where the cementing materials are lime silicates.

In the burning of the silica brick, bonds of several sorts are obtainable. Thus we may get a compound of calcium oxide, alumina, and silica, or an iron silicate, calcium silicate, aluminum silicate, etc. As said before, while the melting point of any one of these materials may be quite high the presence of another material will lower the melting point considerably even tho the latter material may have a higher melting point than the first. This action is very much similar to the effect that the addition of salt produces upon the freezing point of water. To understand this phenomenon one would require a fairly good conception of physical chemistry, and rather than fill considerable space with an explanation of how and why this does occur, we will, for the sake of convenience, take it for granted that such a phenomenon does take place.

In considering the bond we must not overlook the importance of the silica itself. A rock which will not break down to sharp, course splinters will fail to give good brick. A brick, on close examination, is found to consist of an interlacing of the crystals made up from the different forms of silica. A silica brick is similar in structure to a brick made of sawdust and molasses where the sawdust is symbolic of the silica while the molasses resembles in its action the lime silicates and other silicates formed by the silica and the impurities in the quartzite.

A summary of the facts thus far presented indicates that silica brick are acid in character, quite strong, highly refractory but do not stand sudden changes in temperature.

PHYSICS AND CHEMISTRY OF CHROME BRICK

The physics and chemistry of the other refractories is perhaps not quite so complicated as that of silica brick. Chrome brick are made from chrome ore of which chromic oxide is the main constituent. The other ingredients of chrome ore are alumina, iron, lime, magnesium oxide and silica. The substance or substances which are added for the bond, such as fire clay, bauxite, magnesia, dolomite, lime, or tar act very much in the same way as the lime in silica brick. That is, a chemical combination takes place which cements the particles of chromic oxide together. In this case it is an iron chromate, calcium aluminum chromate, or some such compound which acts as the cementing material.

Just as in the case of silica brick the mixture of the materials melts and forms a new compound at a lower temperature than the melting point of the individual oxides, such as lime, chromic oxide, alumina, etc. Chrome brick are neutral, that is they are very inactive and resist all slagging action remarkably well regardless of the nature of the slag, whether acid or basic.

It is the physical properties, however, that give the most trouble with chrome brick. Above a temperature of 1,500 degrees Cent. (2,732 degrees Fahr.) they crumble and disintegrate. This might be explained by the possibility that the bonding material has melted, leaving only the skeleton of chromic oxide standing, which, since it does not interlace as in the case of silica brick, crumbles down under pressure.

ALUMINA CONTENT HIGH IN BAUXITE BRICK

Bauxite brick owe their refractory properties to the high per cent. of alumina which they contain. Pure alumina has a very high melting point, approximately 2,100 degrees Cent. (3,812 degrees Fahr.). The alumina is bonded with fire clay or lime, the cementing material in this case being a calcium aluminate or an aluminum silicate. In using a fire clay as a bond care must be taken as to the quantity added. The chief constituents of a fire clay are alumina and silica. These occur in various percentages depending upon the origin of the clay. The melting points for mixtures of alumina and silica are shown in Fig. 2.

From this curve it is seen that if we have a mixture of 90 per cent. silica and 10 per cent. of alumina we will get a mixture whose melting point is approximately 1,600 degrees Cent. (2,912 degrees Fahr.). Now if we take 40 per cent. alumina and 60 per cent. of silica the melting point is approximately 1,725 degrees Cent. (3,127 degrees Fahr.). However, in the latter mixture you have the first-mentioned mixture of 90 per cent. silica and 10 per cent. alumina, which will melt at the lower temperature of 1,600 degrees Cent. This will leave then only a skeleton of alumina and the brick will be practically no better than if made of the first mixtures. Since silica is an inexpensive material compared to alumina, the second mixture would be very much more expensive than the first and yet hardly any more refractory.

The composition of the mixture which gives the lowest melting point is called a eutectic point, the materials making up this mixture being silica and sillimanite, which is a compound of equal molecular proportions of alumina and silica. A second eutectic point is obtained between mixtures of sillimanite and alumina, having a composition of 37 per cent. silica and 63 per cent. alumina, and zero per cent. silica and 100 per cent. alumina. The eutectic mixture is just a little over 63 per cent. alumina and melts at approximately 1,800 degrees Cent. (3,272 degrees Fahr.).

QUANTITIES OF SILICA AND ALUMINA REQUIRED

Now, if we took a mixture of 80 per cent. alumina and 20 per cent. silica the eutectic mixture of approximately 37 per cent. and 63 per cent. alumina would melt at 1,810 degrees Cent. (3,290 degrees Fahr.) and hence leave the rest as a skeleton which could be crushed readily. Hence, in this case as in the preceding case, the excess alumina, that is, over 63 per cent., would not help much to develop refractoriness. From this it is seen that if a refractory brick which would withstand a temperature of about 1,700 degrees Cent. (3,092 degrees Fahr.) is wanted, it is necessary to have only 63 per cent. alumina and 37 per cent. silica in the mixture.

To sum up these statements, looking at the curve you will see that for any mixture between points A and C the eutectic mixture B will form and since its melting point is 1,600 degrees Cent., it will soften at that temperature. For any mixture between C and E the eutectic mixture D will form and soften at 1,810 degrees Cent. Hence, for a mixture that will not soften below 1,800 degrees Cent. a mixture of the composition between C and E is required.

If we had a fireclay of silica and alumina content of 55 per cent. and 35 per cent., respectively, and added to 100 pounds of it, 50 pounds of alumina we would have a mixture of 60.71 per cent. alumina and 39.29 per cent. silica. By referring to the curve we see that this mixture is between points A and C, hence it will begin to soften at 1,600 degrees Cent. On the other hand, if we had added 10 pounds more of alumina we would have obtained a mixture of 63.33 per cent. alumina and 36.67 per cent. silica which is between points C and E on the curve. The melting point of this mixture would have been above 1,800 degrees Cent.

Bauxite brick are basic and have good strength. The chief objection to their use is that they shrink considerably in the furnace.

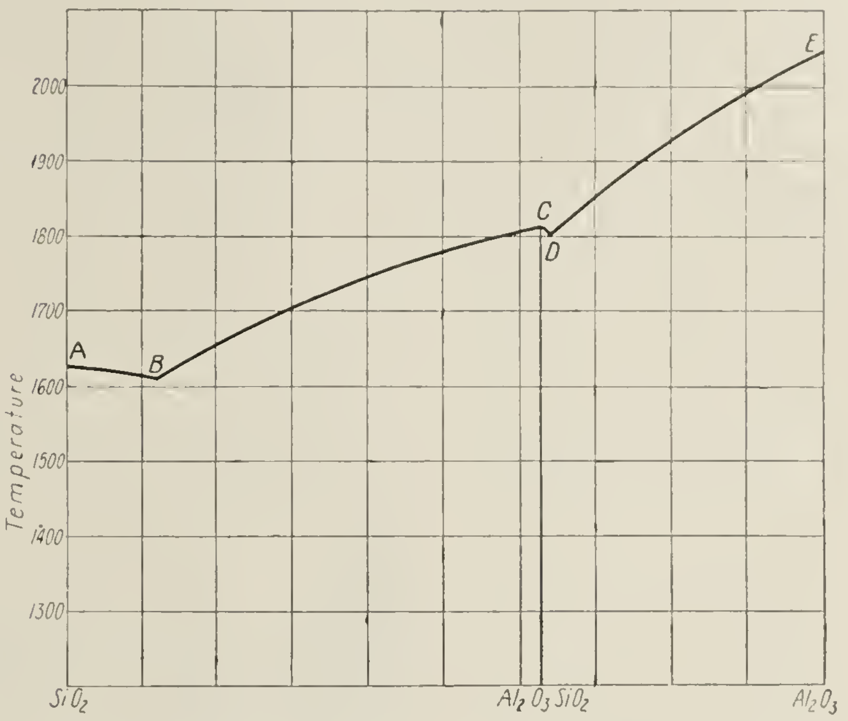


Fig. 2, Illustrating Melting Points of Various Mixtures of Silica and Alumina. Silica (SiO_2) Decreases from 100 to 0 Per Cent. from Left to Right and Alumina (Al_2O_3) Increase from 0 to 100 Per Cent. In the Same Direction

BONDS FOR MAGNESITE BRICK VARIES

Practice varies in different parts of the country as to the kind of bond used in the manufacture of magnesite brick. Some of the bonds used are tar, gelatinous silica, boric acid, caustic alkalis, clay, and iron oxide. Iron oxide is probably used in most cases. At one large factory magnesite brick are made of the following: 25 per cent. high calcined magnesite, 30 per cent. low calcined magnesite, 1½ per cent. iron oxide, and the remainder raw magnesite. In this case the magnesite is calcined at 1,200 degrees Cent. (2,192 degrees Fahr.).

Magnesite is, as we all know, a raw material found in the earth, and whose main constituent is magnesium carbonate. The other constituents are small quantities of iron oxide, calcium oxide, alumina, and alkalis. By heating the magnesite to a high temperature the carbon dioxide is driven off and all the magnesium carbonate is changed to magnesium oxide. This latter substance is a sister to lime. It is a weak sister, however, and is not nearly so active as lime, and hence does not slack so readily. Magnesium oxide is, however, a very refractory substance and possesses physical properties which make it readily adaptable to the manufacture of a heat resisting brick.

The bonding of magnesite brick in the raw state, that is, before the brick are burned, is undoubtedly due to the magnesia which sets very much in the same manner as lime does. This setting action takes place while the brick are being dried and such compounds as hydrates and carbonates of magnesium are formed. The time required for the brick to have sufficient strength in drying to enable them to be handled is very long; some plants take twelve days to dry their magnesite brick. Even after careful drying the brick are weak and care must be taken in setting them in the kiln.

LIME BOND GIVES STRONGER DRIED BRICK

A lime bond would give stronger brick in the dried state, but if we added more lime other objectionable features would be introduced. One important objection to lime is that after burning the brick raw lime is formed again which upon being exposed to the moisture of the air would absorb some of it, as well as some carbon dioxide, thus increasing its volume. Wherever a particle of lime in the mass of the brick would undergo such a process the result would be a swelling of the particle, culminating in spalling.

However, a small amount of lime in the raw material is not objectionable since a very small quantity of it will not have much effect in burning, while, on the other hand, it will aid the brick by its bonding properties in the dry state. Practice will soon tell whether you have too much or too little lime in your magnesite brick.

In burning of magnesite brick we have the formation of iron compounds and silicates which cement the grains of magnesia together. One can readily see the value of the small amount of impurities such as alumina, silica, etc., in the raw magnesite in helping to cement the brick into one mass.

Magnesite brick are subject to spalling under rapid changes of temperature, this probably being due to the unequal expansion and contraction of the compounds acting as the bonding material, and to the magnesia. Owing to the fact that magnesia is the main ingredient of magnesite brick the brick are basic and can be used wherever basic refractories are required.

FIRE CLAY REFRACTORY BRICK

We now come to the ordinary clay brick which are manufactured very extensively and by many different processes. The fire-clay brick is considerably different from any of the above described brick in many ways. It possesses plasticity such as is never reached in any of the others, and it is this plasticity of the clay which enables the brick to hold their shape before burning without the addition of any foreign substance.

Fire brick are ordinarily composed of some highly refractory flint or block clay and a refractory fire clay of sufficient plasticity to bond the flint clay. Flint fire clay, also known as block or hard clay, is found in pockets of fire clay, but is different in its properties from the surrounding clay. It is highly refractory due to the small amount of impurities which it contains. Its chief constituents are silica and alumina, accompanied by small amounts of calcium oxide, alkalis, etc. The plasticity of flint clays is very low and insufficient to bond the clay together and consequently some plastic clay must be added. Since these plastic clays are less refractory they are added at the expense of the refractoriness of the final product.

The plastic fire clays are composed of the same ingredients as the flint clay, only impurities are present in greater quantities, and they also contain considerable amount of colloidal material. Colloidal material is composed of small bacteria, decomposed vegetation, and extremely fine grained particles of clay, which serves to give the clay its plasticity. In the burning of the brick the aluminium silicates, iron silicates, etc., formed serve to hold the brick together into one hard mass.

Fire clay brick vary considerably in refractory qualities owing to the great difference in their composition. In general the highly aluminous fire clays give the best heat resisting brick. The physical properties of clay brick are such that very little trouble is had due to spalling, abrasion, and load carrying ability.

MORE ABOUT IMPURITIES

In discussing the above refractories considerable mention was made about the impurities in the raw material and their effect upon the qualities of the final product. It is probably well to dwell a little more on this subject since a good understanding of the fundamentals of the action of these constituents will make it easy to judge what is going on during the burning process of a brick since it is practically only in that phase of the brickmaking that their effect is of note.

The presence of potassium or sodium oxide will always cause a substance to melt more easily. They produce what is frequently called a fluxing action which is the formation of a eutectic mixture during heating which melts and takes other substances into solution. The more of these so-called fluxes there are present in a clay the less refractory it is. The kind of fluxes present also effect the heat resisting qualities. Some of the fluxes which do not bring down the softening point of a brick to a very low temperature are alumina, silica, chromic oxide, and magnesia. These substances form compounds with each other which have a lower melting point than the individual materials, but their melting point is not very much lower. By melting thus, the grains of unmelted material are in a sort of solution which is analogous to a test tube of water containing grains of sawdust if a condition can be visualized by which the sawdust is thoroly disseminated thruout the water. Upon cooling, these compounds freeze and hold together the unmelted grains much in the same manner as the sawdust would be held in the test tube of water if the water were frozen.

Such compounds as iron oxide, titanium oxide, sodium oxide, and potassium oxide have the property of forming eutectic mixtures with alumina, silica, and such compounds at a much lower temperature than those compounds of the other class. If too much of these materials are present the heat resisting qualities of the brick will be so low that the brick will be unfitted as a refractory substance.

On the other hand, it is beneficial to have a small quantity of these fluxes present so that by their melting, and freezing again they cement the brick together into a strong mass. Practice alone can tell how much impurities can be present in the raw materials.

* * *

BRICK *in* GOTHAM SUFFERS DROP

PRESIDENT WILSON first saw the light of day in Virginia, but the average Jerseyite claims America's war president as a New Jersey product. New Jersey, therefore, wants the rest of the country to know that it has been, is, and will continue to "let business proceed as usual" just as President Wilson has requested, and as an indication of this spirit being followed to the letter attention is directed to Newark, the metropolis of the state. While New York, only nine miles away, shows a decrease in building permits for the first half of the year of 41.6 per cent., Newark boasts an increase of 15.5 per cent. and a general inclination to let the building business proceed as usual.

Conscription is here, and the first call is going to take a lot of good men from the building and allied trades, but you don't hear anybody crying about it. The business of going to war is being gone thru with and it is being done on the plan that whatever is worth doing is worth doing well. Thru the clay regions of Middlesex County and Monmouth County, New Jersey, among the brick yards of the Raritan and along the Hudson, in the

(Continued on Page 244.)

BARNES STAYS *on the* JOB

Barnes Snapped His Knife Shut and Got Up On His Feet. "That's Just It," He Snapped Back. "You Think When You Have Signed a Man's Salary Check You Have Performed Your Full Duty So Far As He Is Concerned. You Are the Kind of Man Who Feels That to Pay His Wife's Fifteen-Dollar Millinery Bill Without Kicking Is of More Pleasure to Her Than to Get Her a Fifty-Cent Bouquet As a Surprise on Her Birthday."

He Also Lets Black Hawk in on the Secret of the General Manager's Hold on His Organization

By G. W. Greenwood

Secretary, United Fire Brick Company,
Uniontown, Pa.

"BARNES, what's the matter with you? Ain't I offering you good money? Isn't it more than you are getting from the one-horse concern you are now hanging out with?" Knitting his shaggy brows, Ben Hawk, the president of the Dominant Brick Co. fixed his piercing black eyes on Barnes, eyes whose hue caused him to be known by everyone as Black Hawk. In fact, he secretly took considerable pleasure in the appellation and in the reputation which he enjoyed—literally enjoyed—as a man of crushing personality.

Nervously running his pen knife back and forth between his fingers, Barnes slowly confessed, "Yes, it is a little more than I am getting at present."

"A little," repeated Hawk scornfully. "Tell me. Isn't it fully twenty-five per cent. more than you are now getting?'

Without raising his head, Barnes nodded.

"Then what are you in business for? Come down to brass tacks. You have ability to sell. I have the money and am willing to pay you for it. What more is there to it?"

"Everybody isn't working for the money," responded Barnes hesitatingly, feeling very much on the defensive.

"Nine out of every ten are, and the tenth man doesn't count. In my younger days when I taught school I used to hear others claiming that they were teaching for the love of it, not for the money. I used to ask them how long they would teach if they didn't get any pay for it. I taught because I had not found any other work which paid me better."

Barnes held his own counsel but felt that the tenth man who wasn't measuring his interest by the pay he was receiving was worth more in holding together an organization and in maintaining its standards than all the other nine taken together.

A TEMPTING BAIT—AND WHAT IT CAUGHT

"Now, Barnes," continued Plack Hawk, as Barnes commenced to cut a row of notches in the handle of his umbrella, after having hunted in vain for a pencil, "every man has his price. If I haven't reached your figure, what is it? How much will you take to desert the molly coddle all you fellows seem to be so much stuck on?"

On the Desk Lay Also an Envelope Which He Recognized as Containing His Salary Check, But Which Was Not Due For a Week. But it Contained Something Else—A Note from the G. M., Not Typewritten, But In His Own Illegible Hand

Barnes snapped his knife shut and got up on his feet.

"That's just it,' he snapped back. "You think when you sign a man's salary check you have performed your full duty so far as he is concerned. You are the kind of man who feels that to pay his wife's fifteen dollar millinery hat bill without kicking is of more pleasure to her than to get her a fifty cent bouquet as a surprise on her birthday. You don't seem to realize that to bring home to a child a toy purchased at a five and ten cent store and to spend an hour playing with it in the child's company is better than to give the little fellow a dollar for spending money. You do not seem to feel that there is anything due your employes aside from their salary. When a man spends from seven to nine hours every day as an occupation his surroundings should be congenial and his association pleasant."

"What do you see wrong with my offices? Aren't they well lighted? Aren't they well ventilated? If not, then the best expert in these lines must have fallen down badly on his job."

"Yes," admitted Barnes, "so far as light and electricity can do so they appear to be bright enough. But I think it is one of Du Maurier's clever drawings in London "Punch," the Englishman's substitute for a comic paper, which shows a little fellow in the corner facing the wall while his younger sister says pleadingly to their mother, 'Please don't scold Bobbie any more. It makes the room so dark!' There are other means of lighting a room in addition to the sun and his artificial rivals. In fact, you may notice that the lighting engineer of whom you speak so highly has used indirect methods of illumination, altho from a mathematical standpoint considerable light is wasted by such a process."

"You bet there is," growled Black Hawk. "But that does not mean one should beat around the bush when he is giving orders. A light house has no use for indirect methods of illumination. It concentrates its light into a direct beam and there isn't enough light to scatter about the premises for a blind bat to see by. I find that the quickest way to get something done is to state plainly and bluntly what is required and if the man does not like it he can say so. What sort of methods do you think you have up your sleeve which will get results quicker by going at them indirectly.

COMMANDS AND REQUESTS

"All sorts of seemingly little things which make a big total. You spoke just now of giving orders. In our camp even shipping instructions are referred to as advices. No one gives commands. Our chief, when he wishes anything done, requests it so that he appears to be asking a favor. It makes one comply in an entirely different spirit when he is asked instead of commanded. When we do something well, we are praised and encouraged, while at the same time we know attention will be called to anything which is not done properly. The nearest you ever come to commendation is in not saying anything when work is done right and you can't find any fault. Then you keep mum. Working under you is like driving an auto in the dark, with no lights. The only way to tell you are still on the road is that you are not hitting any fence posts. No spirited fellow can do effective work while he is having cold water poured down his spinal column."

Hawk's eyes flashed sparks. "If I were ever to be more bitingly caustic than you are right now, I'd have to enlarge my vocabulary. What more have you to condemn in my attitude and methods?"

"Lots," declared Barnes, having warmed up to his subject. "The buzzers in our offices are toned down, sort of soft. Perhaps you would think they were like the office force. Yours, when I heard it while waiting your commands, stabbed the silence like a knife. The office boy jumped as tho stuck with a pin. In our office, when we have finished our regular work, we feel free to go about the plants, read trade papers, and to do other work which will make us more valuable to ourselves and to the company. Perhaps I should not tell you this, but out in your office right now there are probably men sitting, and have been sitting hours, apparently working, but in reality merely writing down strings of figures and making imaginary calculations so as to appear employed. To have worked in our offices does not detract from our reputation, to say the least. And to paraphrase an old saying, a man is known by the company that keeps him."

"Go on, Barnes, don't stop. Surely you have not exhausted the subject?" said Black Hawk as Barnes paused for breath.

CLOSING A SEEMINGLY UNPLEASANT INTERVIEW

"Not by a long shot," he retorted. "It's the subject that has exhausted me. And now, not to prolong this interview which cannot fail to have been unpleasant all around, I'll go back to our own camp where there is more cheer. I wish to apologize for expressing myself so forcibly, and really thank you for the proposition you made, even tho under the circumstances I could not think of accepting it."

As Barnes arose, Hawk did likewise and held out his hand. "Mr. Barnes," he said, 'I don't mind confessing to you that this has been to me not only a profitable interview, but a pleasant one as well. It has given me at least one thing I have always wanted to get, the secret of your General Manager's hold on his organization. You have shown that there are some things money cannot buy, in your case at any rate. If at any time later on you should care to reconsider your decision, drop in and I will see if I can offer you a salary sufficiently small to induce you to accept it," his stern strong features relaxing into a smile.

As Barnes, somewhat aghast at his temerity, emerged into the open air, he said to himself, "That man would sure be a wonder if he were to use an A 1 lubricant in connection with his personal force. So much easier to pull a train of cars than it is to push it."

A SURPRISE THAT PROVED HIS CONTENTIONS

As he entered his own office, the mellowed light of the afternoon sun was filtering thru the awnings and the vase of roses was reflected in the surface of the flat topped desk. On the desk lay also an envelope which he recognized as containing his salary check, but which was not due for a week yet. But it contained something else—a note from the G. M., not typewritten, but in his own illegible hand.

> "You will notice that there is a slight change in your salary check effective the first of the present month. Not as payment for your work, but as an inadequate acknowledgment for loyalty and service which money can neither buy nor pay for. Best wishes for your continued success."

"Wouldn't that jar you?" Barnes asked of himself aloud. "I'm more glad than ever that I am one spring chicken Hawk didn't capture."

But Barnes underestimated, as he discovered later, the means at the command of Black Hawk, when it became a question of accomplishing his ends.

* * *

GUARDING ARMY'S HEALTH *with* BURNED CLAY

IT TOOK THE Walter S. Dickey Clay Manufacturing Co., of Kansas City, Mo., just twelve days to send twenty-one miles of vitrified clay sewer pipe from its plant at that point to Fort Riley, Kan., for the construction of the sewage system at the U. S. Army cantonment. The twenty-one miles of sewer pipe represent 140 car loads, for the manufacture and shipment of which the decks of the Dickey Co. were cleared.

The government order was given precedence over all others, and the fact that the feat was accomplished in such remarkably short time is in a measure due to the excellent transportation service accorded the company handling the government order by the railroads. According to George H. Tefft, sales manager and secretary of the company, there was no trouble experienced in securing the necessary cars and absolutely no trouble at all in getting them quickly under way.

In speaking of the government contract for the sewer pipe and the type of work being done by the government at the various cantonments Mr. Tefft said: "The government first of all is taking every sanitary precaution for the safe housing of its army that it is possible to take. The construction of the sewers at the cantonments are under the supervision of a sanitary sewer engineer.

"Estimates were first made of the amount of sewer pipe needed for the cantonments by diagraming a standard army cantonment for the housing of 35,992 men. For a sewer system that such a camp would demand it was estimated it would require under ideal topographical conditions 16,320 eight-inch pipes and 57,810 six-inch pipes and three thousand each of twelve-inch, fifteen-inch, eighteen-inch, and twenty-four-inch pipes, with proportionate numbers of Y's, T's, and curves.

"When the government sanitary engineers began to compile the estimates for the fourteen national cantonments they also selected the material of which they would make use. Because of the tests which the vitrified clay pipe have withstood, it was chosen as the most substantial and the most sanitary material possible to use in the construction of the sewer systems.

"After the general estimates had been placed in the hands of the engineers in charge at each of the cantonment stations, the figures and estimates had to be revised again and again within the shortest possible time before the correct orders could be furnished the sewer pipe companies. In nearly every case that has come to my attention the six-inch pipe specifications have not changed to any great extent, but because of the greatly increased number of men that some of the cantonments are being

A Part of the Twenty-one Miles of Sewer Pipe Used at the National Army Cantonment at Fort Riley, Kan.

prepared for and because of the particular topography of the country where the cantonments are being located there has been an increase of almost 500 per cent. in sizes larger than twelve inches.

"Each of the federal cantonments will house the division headquarters, field, signal, and aero squad, brigade headquarters, regiment of infantry, regiment of light artillery, regiment of heavy artillery, regiment of engineers and engineers' train, aero squadron, headquarters' train, supply train, sanitary train, balloon corps, and telegraph battalion.

"Every waste drain, faucet, and hydrant in the entire camp, in fact, everywhere, is emptied directly into the sewers. There are drains at every possible place in the cantonments. There are 600 eighteen-inch traps. At Fort Riley the government also is using fireproof clay for fireproofing the chimneys and flues of the houses and barracks. A cylindrical vitrified clay pipe is used for this purpose. The outer surface of the clay pipe is immediately next to the metal casing of the chimney or flue, and the metal stovepipe, six inches in diameter, is directly inside the clay pipe, yet does not touch it on any side. This is a new method of fireproofing flues developed especially for government use."

The Walter S. Dickey Clay Manufacturing Co. and several other of its companies are also furnishing sewer pipe for twelve or fifteen of the national guard and aero camps. The company is furnishing pipe for the national cantonment at Des Moines, Iowa, and the San Antonio Sewer Pipe Works is furnishing that for camp Wilson, at San Antonio, Tex. The Texarkana (Ark.) Pipe Works is furnishing the sewer pipe for the camp being erected at Little Rock, Ark.; the Macon (Ga.) Sewer Pipe Works that for the camp at Columbia, S. C., and the Chattanooga (Tenn.) Sewer Pipe Works that for the cantonment at Atlanta, Ga.

The installation of the huge sewer system at Fort Riley, Kan., is being accomplished in record time for such work. Large forces of men are engaged in laying the pipe, and each day the work of laying 150 feet more than that laid the day before is being placed upon them. The men are thus becoming gradually hardened to the work, and great speed is being made in installing the twenty-one miles of pipe.

* * *

Chamber of Commerce Disavows Intention to Discriminate Against Brick

"Saving Steel with Mill Construction" was the title of the lead story appearing in the July 17 issue of *Brick and Clay Record*, in which was reproduced the text of Bulletin No. 2, on "Iron and Steel," issued by the Chamber of Commerce of the United States, calling attention to the acute steel situation, and emphasizing the necessity for using substitutes for this material wherever possible. If substitutes were not found, the bulletin warned, those businesses which were dependent upon steel for activity would probably be compelled to curtail, or possibly to suspend operations during the period of the war requirements of the government.

The bulletin, while recommending the use of wood and concrete in place of steel wherever possible, failed to make any mention whatsoever of burned clay building materials, and for this reason, was greeted by a storm of protest against the seeming discrimination. A representative letter voicing the grievance of the clay products industry, written by R. D. T. Hollowell, secretary of the American Face Brick Association, was published in the article appearing in the July 17 issue.

In reply to this letter, Waddill Catchings, chairman of the Committee on Co-operation with the Council of National Defense, to whom it was addressed, sent the following letter:

> Your letter of the second instant, has been duly received. The bulletin to which you refer was prepared with particular reference to the iron and steel situation, and the reference to other materials was purely by way of example. There was not the slightest thought of discriminating against brick in favor of any other material. The writer would have been only too glad to have referred specially to brick if this material had been before his mind at the time.
>
> We shall be glad, upon a later occasion, to point out the condition in the brick business, and have no doubt, in the meantime, you will appreciate that the bulletins are written under considerable pressure, and that there was no intention to discriminate against brick.

In reply to a very expressive letter sent by E. R. Sturtevant, the new secretary-treasurer of the Hollow Building Tile Association, with offices in Chicago, D. A. Skinner, acting secretary of the Chamber of Commerce, reiterated the sentiment expressed in the letter received by Mr. Hollowell, and again gave assurance that there was no intentional discrimination, but that the error was due to an oversight and would be corrected in another bulletin soon to be issued along the same line. Mr. Skinner's letter is as follows:

> Receipt is acknowledged of your letter of July 18, in regard to our War Bulletin No. 2, and calling our attention to hollow building tile as an important building material to substitute for steel. We appreciate your writing us with respect to this matter.
>
> In issuing War Bulletin No. 2, the chairman of our committee to co-operate with the Council of National Defense, by way of illustration only, made reference to wood and concrete as substitutes for steel. Your letter and others along the same line, have been brought to the attention of the chairman of the committee to co-operate with the Council of National Defense, and he advises that as soon as an opportunity is presented, a second bulletin along these lines will be issued, at which time he will be pleased to point out the importance of hollow building tile, brick, etc., as an important substitute building material.

It will also be remembered that in the article appearing in the July 17 issue of *Brick and Clay Record* it was suggested that, to conserve the steel supply of the nation, re-enforced concrete or fireproof construction be abandoned during the period of shortage and mill type of factory construction of lumber and brick be adopted. The extent to which this campaign has progressed may readily be appreciated by reading the following telegram, sent by the Illinois Society of Architects, and placing its official stamp of approval on the proposed method of minimizing the amount of steel used in industrial constructional work:

> We suggest that the Council of National Defense advise the architects and builders of the country to refrain from constructing steel and re-enforced concrete buildings and revert to the old standard of building construction, that is, brick and mill constructed buildings wherever practicable in order that the steel of the country may be conserved for governmental needs; we believe it to be the patriotic duty of architects and builders to use a minimum of steel in these trying times.

* * *

C. R. Mandigo Joins Officers' Reserve

Clark R. Mandigo, consulting engineer for the Western Paving Brick Manufacturers' Association, with offices in the Dwight Building, Kansas City, Mo., recently resigned his position to enter the training camp for the officers' reserve corps at Fort Riley, Kan., It is understood that Mr. Mandigo has been commissioned a captain in the reserve corps.

* * *

Brickmaking in Nashville, Tenn.

According to a recent survey, the city of Nashville, Tenn., possesses four brick concerns which do an annual business of $400,000 on an investment of $600,000 in capital. Four hundred people are employed at these four plants and their annual salaries amount to $175,000. It is claimed that brick manufactured in Nashville are shipped into twelve states.

Death Takes P. L. Simpson

Peter Liston Simpson was born on December 21, 1848, at Boness, Scotland, and died on July 11, 1917, at his home in Chicago. Mr. Simpson was well known in the clayworking industry for his many sterling qualities. He was an inventor of many different clayworking machines, one of the most successful of which was the Simpson Dry Press. He served his apprenticeship as a foundry man in the Bathgate Foundry at Bathgate, Scotland. In 1870 he migrated to Toronto, Canada, where he married Janet L. Teasdale, of Airrie, Scotland. In 1875 he moved to Cleveland, since which time he has been a resident of the United States. He started in partnership with his sons in the clay machinery business in 1889 in Chicago, where he remained until his death. In 1903 this business was consolidated with that of one of the largest clay machinery companies in the United States. Mr. Simpson was an enthusiastic golfer and a devotee of literature and music. In the death of Mr. Simpson the industry has lost a really true and genuine friend.

P. L. Simpson

* * *

W. S. Dickey Men Offer Their Services

Don Stophlet, sales representative of the W. S. Dickey Clay Manufacturing Co., Kansas City, Mo., recently made application for admission into the second officers' reserve training camp at Fort Riley, Kan. Mr. Stophlet hopes to enter the training camp some time in August.

Bert R. Mullen, agricultural engineer for the Dickey company, and Albert Batliner, assistant plant foreman, have enlisted in a new national guard unit and an engineers' corp which is being formed at Kansas City. Mr. Mullen is actively interested in organizing the two companies of engineers and will most likely be commissioned in one of them.

* * *

Western Magnesite Association Formed

The growth of the magnesite industry in California has led to the organization, on July 16, of the Western Magnesite Association with headquarters in San Francisco. Robert D. Adams, of the Northwest Magnesite Co., was elected president, George White, of the Tulare Mining Co., and Frank Sweasey, of the White Rock Mining Co., vice-presidents, and A. N. Sears, of the Pacific Magnesite Co., secretary.

The executive committee includes: W. W. Kamm, T. C. Price, W. P. Bartlett, W. E. Provost, Edward de Moulin, S. L. Schwartz, and N. V. Sinclair. The association will work to have a protective tariff put on magnesite to preserve the industry after the close of the war.

* * *

EASTERN REDS RALLY *with* BIGGER INTEREST

IF THE SHALE FACE BRICK manufacturers of New York and Pennsylvania are not reaping the benefits of better knowledge of costs, market conditions, proper trade practice, and operating conditions it is not the fault of John H. Black, secretary-treasurer of the Jewettville Brick Co., Buffalo, N. Y.

Mr. Black was elected chairman of the Eastern Red Face Brick Association, at its organization at French Lick Springs, last December. Ever since that time, enthusiastic monthly meetings have been held, to which have come regularly the great majority of the red face brick manufacturers of the district directly interested.

The last monthly meeting of this association was held at the Lafayette Hotel, Buffalo, on Tuesday, July 10. Among the various matters discussed were coal costs, equipment situation, conditions of labor, promotion of the demand for face brick, and methods of purchasing materials.

Mr. Black's characteristically forceful address before the meeting is herewith presented for the benefit of those in that division who were unable to attend and for manufacturers of face brick in other sections. The text of the address is as follows:

I want you gentlemen to know that the trouble and expense incurred in coming to Buffalo is appreciated by Mr. Degenhart and myself. We are mighty glad you are here.

When informed by the secretary of the American Face Brick Association that I had been delegated to organize this eastern division, and to aid and foster its development, I suffered with a terrible quaking of the heart and a fearful shaking of the knees.

When our first regular meeting occurred in January at Williamsport, and I looked around that big room and observed the number of vacant chairs between the representatives of the several plants, that feeling of fear was not in any way reduced. Observation of the apparent feeling of splendid good fellowship and heartiness prevailing during our last two meetings, however, has certainly made me feel that it has been worth while.

What is a brick? It is raw material taken from the face of the earth, fashioned by the hand of man, and by the judicious use of fuel, taken from the bowels of the earth, made into the most useful building material known.

(Continued on Page 246)

PROPER DRAFT CONDITIONS *in* BURNING KILNS

Wide Range of Control Advocated as Essential to Fuel and Equipment Economy in Burning

By Arthur E. Williams

Associate Ceramic Chemist, U. S. Bureau of Standards, Pittsburgh, Pa.

IN A CONSIDERATION OF ECONOMY in burning kilns, the factor of time is no doubt the most important. Its importance arises from two sources, economy of equipment per unit production, and economy of fuel.

Evidence shows that the quantity of fuel used per unit of time after any individual kiln has been lighted twelve hours does not change to any great degree. About as much coal is consumed per hour in getting a kiln hot, as is consumed in holding the heat when it is on high fire. Thus, fuel economy is largely a matter of saving time.

In most cases if time is to be saved on a burning schedule, the saving must be effected during the heating-up period. But little time can be saved within the period of settling or vitrifying the ware, this latter period having a maximum rate of settle or shrinkage which dare not be overstepped without damage, and which is reached by most burning systems.

WIDE RANGE OF DRAFT CONTROL ESSENTIAL

In order to obtain speed in the heating-up portion of the burn it is necessary to have a very good initial draft and a wide range of draft control. With the present customary method of kiln construction, in which chimneys less than fifty feet high connect anywhere from one to four kilns, it is rarely possible to get sufficient draft in the early part of the burn, owing to the chimney and flues not being continually hot, consequently making a wide range of draft control impossible.

It is also necessary to have the floor openings of a down-draft kiln constricted to a very great degree if proper distribution of heat is to be obtained. This condition, however, under the ordinary methods of construction, gives very poor initial draft conditions. To illustrate, a kiln on high fire with a properly constructed floor gives a draft of 0.22 inches on a differential draft gauge when the damper is wide open, and a draft of 0.16 to 0.18 inch when the damper is about two-thirds open. Under these conditions the draft at the beginning of the burn would only be 0.05 to 0.01 of an inch, which makes it necessary for the chimney to warm up before the burning can be pushed ahead and the moisture removed from the kiln rapidly enough.

The desirable condition of affairs would be a draft 0.30 of an inch at the beginning of the burn and a damper adjustable to give the proper draft for finishing, which would be from .16 to .20 of an inch for oxidizing conditions.

THREE METHODS OF SPEEDING UP BURN

This arrangement may be obtained under conditions of proper heat distribution only by greatly increasing the available draft on a cold kiln—increasing the draft to such an extent and in such a manner that a high draft can be concentrated on the

The Two-Hundred-Foot Stack on the Plant of the Decatur (Ill.) Brick Manufacturing Co., Which Provides the Draft for the Entire Battery of Sixteen Kilns. The Stack Measures 16 Ft. 2 In. at the Bottom and 9 Ft. at the Top, and Is Supported on a Thirty-Foot Square Reinforced Concrete Foundation needy kilns at will. This may be done three ways: First, a large stack connected to a group of ten to twelve kilns; second, a positive fan draft connected to a group of twelve kilns or more, replacing chimneys entirely; or third, a small fan mounted on a movable platform and arranged to connect to the chimney flue of any kiln on the yard.

In the first case a chimney 175 to 200 feet high placed in the center of a large collecting flue is sufficient to handle from ten to fourteen kilns, depending on the conditions of distance between kilns, size of kilns, curves, etc., small connecting tunnels to join each kiln to the collecting flue.

A large fan may easily be made to replace the large chimney, the flue system being similar to that used with the dryer fan. Fan draft is used to a considerable extent on continuous kilns, and seems to be very much more desirable than a chimney draft. Also, where twenty-five to thirty kilns are in use, one fan could be made to furnish draft for all of them.

The application of a small fan to a chimney during the early stages of a burn has been tried and has proved to be a great time saver. It proves a satisfactory arrangement to apply large initial draft to kilns on an old plant where constructing a large draft unit is not feasible. In order to do this the fan is mounted on a movable platform, usually with a motor as its power plant, and is arranged so that the suction end enters the chimney flue on the kiln side of the damper and the exit end on the chimney side of the damper.

Table Showing Relative Draft for Different Heights of Chimney.

Internal Air 552° Fahr. External Air 62° Fahr.

Height of chimney in feet.	Draught power in inches of water.	Theoretical velocity in feet per second.		Pounds of coal which can be burned per sq. ft. of grate.
		Cold air enter.	Hot air at exit.	
10	.073	17.8	35.6	4.00
20	.146	25.3	50.6	7.50
30	.219	31.0	62.0	9.50
40	.292	35.7	71.4	11.60
50	.363	40.0	80.0	13.10
60	.438	43.8	87.6	14.50
70	.511	47.3	94.6	15.80
80	.585	50.6	101.2	16.90
90	.657	53.7	107.4	18.00
100	.730	56.5	113.0	19.00
120	.876	62.0	124.0	21.00
150	1.095	69.3	138.6	23.50
175	1.277	74.3	149.6	25.45
200	1.460	80.0	160.0	27.28

Thus, the fan is connected in series with the kiln and chimney and acts as a booster.

FACTORS OF SAFETY TO BE CONSIDERED

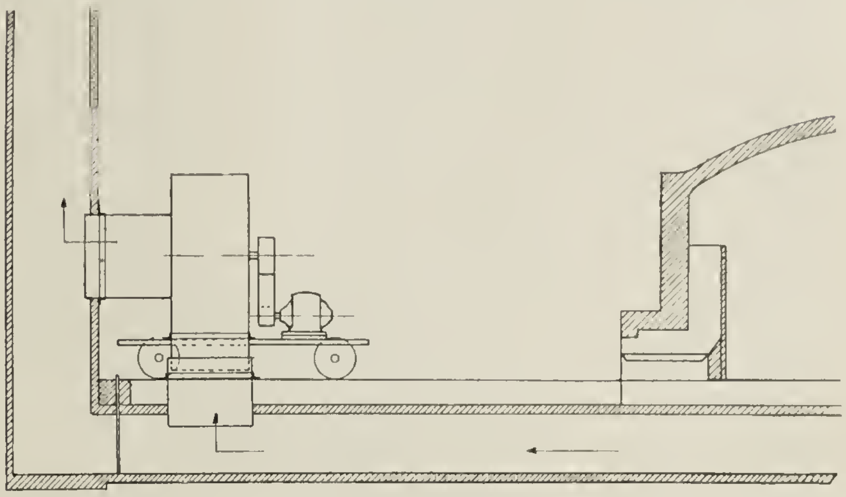
Several factors should be considered to avoid dangerous results due to speeding up the burning process, altho the maximum speed at which clay products may be safely burned is greatly in excess of the speed generally attained.

The maximum rate of watersmoking and the time required for oxidation should be separately determined for each product. By this method, neither damage nor waste of time will be experienced in these periods. It is a rather noticeable characteristic that clay products dried in a hot air dryer maintaining a maximum temperature of 250 to 300° F., do not require any special treatment during watersmoking, whereas, ware dried in an open air dryer or in a sewer pipe dryer where the temperature is rarely over 100° F. is much more tender, and will crack very easily with too rapid watersmoking.

The latter probably explains the trouble experienced in watersmoking hollow ware too fast, which is not so generally experienced in watersmoking brick. To illustrate this factor, there is a plant burning brick in which the kilns are showing red in the upper courses at the end of twenty-four hours. There is another plant burning sewer tile, on which six-inch tile are watersmoked for twenty-four hours, the temperature not being above 300° F., but the burn is completed during the next twenty-four hours.

BURNING OUT THE BLACK CENTER

The time necessary to burn the black center from a brick depends on the particular clay at hand, but the quickest way to remove the black center is to raise the temperature to a point determined experimentally, where it disappears the most rapidly, and hold the kiln at this temperature, rather than raise the heat slowly from beginning of the burn until far past the danger zone. The temperature at which oxidation takes place to best advantage for shales is somewhere between 1300° and 1450° F. and even when a clay requires a considerable time to burn out the black center the temperature may be raised rapidly to this point.



A Small Fan Applied to the Chimney During the Early Stages of the Burn Supplies Large Initial Draft to Kilns Where Constructing a Large Draft Unit Would Not Be Feasible

Considering kilns holding sixty to one hundred and fifty thousand brick, it is regarded as good time to finish a kiln of face brick in six days and a kiln of pavers in seven or eight days. With proper draft arrangements, however, kilns of face brick are being burned between four and four and one-half days and paving brick in five and five and one-half days.

The results of tests to determine the maximum speed at which building brick may be burned showed that brick made from the particular shale tested could be burned to a dense vitrified body without any disfiguration in forty hours. These brick were set but seven courses high, and thus the load which might cause pinching was not present, but the very evident fact that the heat could be raised so fast without damage is worthy of much consideration.

⁂

Lackland Resigns Laclede-Christy Post

H. K. Lackland, sales manager for the Laclede-Christy Clay Products Co., of St. Louis, Mo., since 1907, has resigned from his position with that company to reenter the clay products industry for himself, and has been succeeded by J. H. McKelvey, according to an announcement recently sent out from the company's offices.

Eighteen years ago Mr. Lackland acquired the Jamison-French Fire Clay Co., at St. Louis. In 1904, the year of the St. Louis World's Fair, he joined the forces of the Laclede-Christy Co. as manager of the glass industry department and head of the research work of the plant, and three years later rose to the position of sales manager. In the meantime he transferred the Jamison-French Co. to the Laclede-Christy Clay Products Co.

His resignation became effective on July 1, and since that time he and Mr. Payne have organized the Laclede-

Payne Refractories Co. and have established offices in the Boatsmen's Bank Building. In the short time the new company has been operating, according to Mr. Lackland, conditions have proved very favorable.

J. H. McKelvey, who has been promoted to the position left vacant by the resignation of Mr. Lackland, has been a member of the Laclede-Christy organization since before the consolidation of the two parent firms. He joined the forces of the old Christy Fire Clay Co. about fifteen years ago, starting in as shipping clerk. By the time the consolidation was made in 1908 he obtained a position as sales manager and showed such ability that with an expansion in the business he was placed in charge of the glass industry department. The enviable record which he set while in this department placed him in line for the position of general sales manager, which he assumed on July 1. With the impetus given to the business of the Laclede-Christy Clay Products Co. in refractories by the war, the position to which he has been advanced is one of great importance.

* * *

New Sewer Pipe Association in West

Pacific Coast sewer pipe manufacturers are about to launch a new association, and plans for a preliminary meeting are already completed. Representatives from the manufacturers of the San Francisco and Los Angeles territories and representatives from at least two of the larger northern sewer pipe makers have already met in a conference at the Palace Hotel in San Francisco for the purpose of forming a temporary organization. The promoters of the movement have already been assured that the Denny-Renton Co., of Seattle, Wash., and the Washington Brick, Lime & Sewer Pipe Co., of Spokane, Wash., will participate.

* * *

KENTUCKIANS FORM STATE ORGANIZATION

WITH EVERY INDICATION that it will develop into a powerful and useful organization, the Kentucky Clay Products Association was organized at a meeting of manufacturers and retailers in the "Blue-Grass State," held in Louisville on July 25. The turnout was not as large in numbers as had been expected, but the brick and other clay products manufacturers present represented a large proportion of the production capacity of the state. Many other manufacturers wrote or wired that altho they were not able to be on hand they were heartily in sympathy with the purposes of the movement, and would certainly be found on the membership list in the immediate future.

H. C. CRAMER
President, Kentucky Clay Products Assn.

H. C. Cramer, vice-president and general manager of the Lexington (Ky.) Brick Co., was elected president; F. C. Klutey, first vice-president of the Kleymeyer-Klutey Brick & Tile Works, of Henderson, was elected first vice-president; Isaac H. Tyler, president of the Tyler Building Supply Co., of Louisville, was elected second vice-president. James T. Howington, general manager of the Coral Ridge Clay Products Co., was made treasurer. J. Crow Taylor, of Louisville, was elected secretary, and will draw a salary, to be fixed by the executive committee.

There was comparatively little discussion on the floor of the convention of general conditions, problems of manufacturing, selling, coal, etc., most of the session being given over to the work of organization. M. J. Bannon, president of the P. Bannon Pipe Co., of Louisville, presided, and Mr. Taylor acted as secretary. One after another every man present expressed his approval of the purpose of organization, whereupon Mr. Taylor proceeded to read the draft of a constitution he had prepared, which stated the purposes of the organization of the clay products men, and which disclaimed any intention to operate in opposition to the laws against combinations. The constitution was adopted after it had been read, section by section, discussed, amended and approved.

Membership in the organization is open to manufacturers of all types of clay products, to those who sell these products, and to manufacturers of equipment used by clay products manufacturers, provided they operate in Kentucky. Contiguous territory may also be drawn on for membership. Applications for membership are passed on by the board of directors, subject to the approval of the association. The organization is to hold annual meetings, as well as special meetings on call, all of which are to be called by the board of directors, which will name the time and place. After some discussion the annual dues were fixed at $25, payable semi-annually.

The organization is much on the order of a corporation. A board of nine directors is provided for, to rotate in office in three-year terms, the first election seeing three directors elected for three years, three for two years, and three for one-year terms. The officers of the association are elected by these directors on the floor of the convention, and they must be chosen from the board of directors. An exception was permitted in the first election, in the case of Mr. Howington, who put the majority of the other officers up for election. As treasurer of the association he will also be a member of the

I. H. Tyler, Second Vice-President J. C. Taylor, Secretary J. T. Howington, Treasurer

OTHER OFFICERS IN THE NEW KENTUCKY CLAY PRODUCTS ASSOCIATION

executive committee. Five members of the board of directors, two members of the executive committee, and 20 per cent. of the membership constitute a quorum.

DIRECTORS ELECTED

The directors elected are as follows:

Three-year terms: F. C. Klutey, of the Kleymeyer-Klutey Brick & Tile Works, Henderson; M. J. Bannon, president of the P. Bannon Pipe Co., Louisville, and H. C. Cramer, general manager of the Lexington Brick Co., Lexington.

Two-year terms: H. T. Miles, secretary and treasurer of the Spahr Brick Co., Maysville; Andrew Hillenbrand, president of the Hillenbrand Brick Manufacturing Co., Louisville, and A. F. Kleymeyer, secretary and treasurer of the West Point Brick & Lumber Co.

One-year terms: William H. Hall, president of the Maysville Brick Co.; Isaac Tyler, president of the Tyler Building Supply Co., Louisville, and George R. Erwin, of Calhoun.

Of these directors and officers named all were present except Mr. Hall, of Maysville, but Mr. Miles, of the same city, brought a message from Mr. Hall to the effect that he would be glad to assist in the development of the new body. In addition to the men named there were present, and registering as charter members: James M. Riley, of Maysville; Leo M. Parson, Tyler Building Supply Co.; H. H. Frazier, of the R. B. Tyler Co.; S. A. Grobmyer, of the Carrollton Brick Co., and T. A. Randall, of Indianapolis.

MEMBERSHIP CAMPAIGN LAUNCHED

One of the plans for increasing the membership of the organization calls on the charter members to report at once to the secretary the name of all the eligibles in their respective sections. There are about eighty manufacturers in the state and many more retailers who are expected to join. When the list is made up the members will approach all in their immediate sections, and Secretary Taylor is to make a tour of the state in the interest of the organization. It is proposed that the first year will be devoted principally to strengthening the association. Other work will be taken up next year and subsequently.

There were several interesting entertainment features at the organization meeting, all the visitors being guests of the Louisville Brick Manufacturers & Dealers' Association. They had luncheon and dinner at the Tyler Hotel, the dinner being in honor of the leading architects of Louisville, twelve of whom were present. After the dinner there were a number of interesting talks. An automobile trip was taken in the late afternoon to the National Army cantonment which is being erected south of the city.

* * *

Fire Damages Old Iowa Brick Yard

Fire broke out on the night of July 16 on the small yard of the Price Brick Co., at Clinton, Iowa. The fire company was called and the blaze extinguished before much damage had been done. The yard operated by the Price Brick Co. is undoubtedly one of the oldest in the state of Iowa and it still clings to the same method of manufacturing soft-mud brick that characterized the "plants" of forty and fifty years ago—it is an interesting echo of the olden days in Middle Western brickmaking. For its pugmill it has a tall upright wooden container, down thru the middle of which runs a timber shaft with arms extending outward to mix up the clay and to force it to the bottom, where it passes thru a small aperture onto the molder's bench. This workman separates a lump of conventional size and after sanding his mold, throws the lump of clay into its five pockets. With a taut wire stretched across a small bow he cuts off the surplus clay and passes on the mold to one of three or four small boys, who turn the brick upon the ground to dry. The clay for Price brick is brought from a nearby point by cart, dumped into a reservoir at the side of the pugmill, from which a bare-footed workman throws it into the pugmill with a pitchfork.

* * *

While new construction in San Francisco, Cal., during the month of June showed some falling off as compared with the month preceding as well as with the month of June, 1916, it was nevertheless above rather than below the average for the past year. It was also more than double the record for June, 1915. The total valuation of the building permits issued during June was $1,800,000, a drop of about ten per cent. as compared with the same month last year.

WHY NOT KNOCK?

Because the Spirit of Fair Play is Strong in Most Men and They Hate a Knocker

By A. V. Smith*

Streator (Ill.) Brick Company

WELL, you surely have not given that architect anything for the way he knocked your brick was a "caution." Thus spoke a board member on one of our latest school jobs. And then with a friendly assurance he added, in a lower and more confiding tone, "We'll surely give you a chance, and, other things being equal, we all prefer to give you the business."

Thus it goes the world over, for the best business men all hate a knocker. One of the surest ways to make the prospect skeptical of you and doubtful of your goods is to speak disparagingly of the other fellow's product.

A. V. SMITH

The spirit of fair play is strong in every good business man, whether it be on the athletic field or in the more strenuous contest of business. Each man has a right to tell about his own goods, and when the other fellow encroaches on that prerogative he is usually greeted as an unwelcome interloper.

INSPIRE CONFIDENCE IN CUSTOMER

To sell successfully, one must usually inspire the customer, first of all, with some confidence in one's self. The living personality of the salesman is often all of the company that the customer sees. He necessarily must form his conception of the house from what he sees in the salesman. With the neatness of dress and politeness of manner on a par, that man makes the best impression whose method of selling most nearly conforms to the recognized principles of salesmanship. These principles are as well understood by those who buy as by those who sell, even tho the buyer may never have studied the so-called modern science of salesmanship.

As Walter Dill Scott has so well pointed out, argument alone is not sufficient to move very many men to decision. There is nearly always required a much more subtle force than cold reasoning logic. In the great majority of cases, the emotions finally induce the action. To give this final push, suggestions are most effective when made by one who has first of all won the confidence of the prospective buyer.

When seeking to win the confidence of the prospect, it will usually be hazardous to say anything that is likely to offend. Altho the traveling evangelist may be expected to take a crack at everybody's whims, the traveling salesman can not afford to take any such chances. The prospective customer must be led by suggestions to give up his preconceived notions, to embrace those of the salesman and yet to feel at the same time that he is making up his own mind. Knock another brick and you may be hitting the very one he was thinking to be the best. By thus openly wounding his pride in his own judgment, your offense has closed his mind against your persuasive evidence.

HONESTY AND KNOCKING OPPOSED TO EACH OTHER

The honest man seldom needs to tell people of his own integrity and never wastes time accusing his neighbors of dishonesty. Likewise the fellow who is confident of himself and has faith in his own goods also has some respect for the product of his competitor. Just as the average man is afraid to trust the fellow who boasts of his own sanctity and speaks depreciatingly of his fellows, so the thoughtful buyer hesitates to place his order with the salesman who insists that all the bad features of brick are inherent in the other fellow's product.

There is so much to say in favor of every good brick that any divergence from such a line of talk is likely to produce distrust at once. When you talk about the other brick, the suspicion is sure to arise that your own has not enough good points to keep you busy.

While most salesmen theoretically believe that it is bad policy to knock, yet how to meet such unfair competition is often a difficult problem. If the disparaging remarks are open or presented crudely, they come back with their own boomerang poison. But sometimes asper-

---

*One of the two papers winning honorable mention in the recent Sales Ethics Contest conducted by **Brick and Clay Record.**

sions are made so skillfully that their subtle effect is not realized even by the usually discerning mind of the buyer. When a prospect has been influenced by such crafty sales methods, it may sometimes seem advisable to clear his mind by using the same tactics.

SMOTHER FIRE WITH ENTHUSIASM

But as fighting fire with fire usually starts a conflagration, a safer method is to smother the other fellow's fire with your own enthusiastic sales talk. By putting emphasis on the salient features of your own brick, the prospect may be made to forget or at least to minimize the importance of the objections raised.

Definite questions are usually welcomed and easily handled, but the hardest to answer is the broad one sometimes made as to why your brick are better than others. To compare point by point would be likely to tempt one into disparagement of the others along with praise of one's own. The only safe policy is to point out carefully your own good features, putting special emphasis on those points wherein your product particularly excels, and let the customer see for himself how the other lines are lacking.

While the immediate sale is always the matter of first hand interest, the permanent good of the business is of paramount importance. Any derogatory remark about one brick may lead to distrust of all. If a hesitating buyer is told that the other brick will scum, the question at once arises whether all brick will not "show white." Suggest that the other company may not ship brick as good as samples submitted and the doubt is sure to arise if any shipment will come up to grade.

Just as slave holding puts the owners in bondage along with the vassals, so the habit of knocking poisons the mind of the salesman as well as the prospect. As everyone grows by what he feeds on, so his mind develops by what he thinks. If one dwells on the imperfections of competing lines of product, he weakens his power to see the good in his own. He lessens his confidence in all brick and undermines his best asset in successful salesmanship, the impelling power of enthusiasm.

* * *

Homesuite Home Co. Doubles Original Plan

Two communities of 100 fire safe houses each will be started at the same time by the new Homesuite Home Co., Cleveland, instead of one group as originally planned. This is the announcement of Robert C. Mitchell, general manager of the company. About fifteen locations for these communities are now under consideration, from which two will be chosen, one on the east side and one on the west side of Cleveland. They will each be in industrial neighborhoods. The 200 buildings will be constructed of hollow tile, with brick or stucco facing and slate or other fireproof roof. Construction will start early in August and the work will be rushed to completion.

This will be the first experiment in the country in the construction of a large number of clay product houses to sell at a moderate price.

⁂

Import Duties on Clay

The United States Board of General Appraisers has held the following in connection with the import duties on clay: "Held, That the privilege of free entry under paragraph 450 is limited to common blue clay and Gross-Almerode glass-pot clay, suitable for the manufacture of crucibles and glass melting pots or tank blocks, and, as evidence fails to establish that the clays in question are either common blue clay or Gross-Almerode glass-pot clay adaptable to such uses, the protests must be overruled and the collector's assessment of duty affirmed."

A protest was made to the board by Koons, Wilson & Co. against the decision of the Collector of Customs at the port of Philadelphia. Clays assessed with duty at the rate of $1 per ton, under paragraph 76, of the tariff act of 1913, were claimed by the protestants to be entitled to free entry, under paragraph 450 of the same act.

⁂

S. A. F. E. Holds Annual Outing

Seventy-five members, their wives, families and friends of the Society Advocating Fire Elimination attended the annual outing of that organization, which was held at the East Shore Country Club, near Cleveland, Saturday, July 14. Arrangements were in charge of Ralph P. Stoddard, secretary, and an entertainment committee.

The trip was made by motor. Rain delayed the start somewhat, but when the weather cleared about 11:30 o'clock in the morning twenty-five well-filled automobiles were assembled for the start. Harry L. Davis, mayor of Cleveland, was to have been present, but as he was detained he was represented by Floyd Waite, secretary to Director of Service Bernstein. Mr. Waite gave an informal address.

No formal program was carried out, but there were games of tennis and volley ball, and dancing in the evening. The party returned home about 11 o'clock.

A Few of the Seventy-five Members of the S. A. F. E. Beautifying the Grounds of the East Shore Country Club at the Annual Outing

W. A. Fay, president of the Cuyahoga Builders' Supply Co., took advantage of the picnic to give his entire office force an outing, about eighteen members attending. Mrs. Fay was present and chaperoned the young ladies. On the way out Mr. Fay's automobile, containing himself and Mrs. Fay and several of the office force, was struck by another car and badly damaged. No one was seriously hurt, but all the occupants of the car were severely shaken up.

TENTATIVE SPECIFICATIONS *for* BURNED CLAY SEWER PIPE

Proposed at the Meeting of the American Society for Testing Materials, Held at Atlantic City, June 26-29

In its report to the society in 1916, Committee C-4, on Clay and Cement Sewer Pipe, presented a compilation of its previous work in the form of an appendix entitled "Analytical Data for Sewer Pipe," which was printed in the 1916 volume of the proceedings of the society. This compilation was the subject of extensive discussion by the committee during a number of meetings at Atlantic City in June. 1916, at which were present also some representatives of the interested industries.

Since the last annual meeting, the officers of the committee have held ten meetings. Sub-committees have presented reports on the form of proposed specifications for clay and cement-concrete sewer pipe, on trench pressures, and on the Tentative Recommended Practice for Laying of Sewer Pipe, published as tentative last year.

These reports were discussed, modified, and approved at meetings of the committee held in New York on April 24 and 25, 1917, and the following specifications for burned clay sewer pipe were presented to the last meeting of the society, held on June 26-29, together with the recommendation that the standards set be printed as tentative for one year before being presented to the society for adoption.

Criticisms of these tentative specifications are solicited and should be directed, preferably before January 1, 1918, to Mr. Rudolph Hering, chairman of the committee, at 170 Broadway, New York, N Y.

THESE SPECIFICATIONS cover clay products intended to be used for the conveyance of domestic sewage, industrial wastes and storm water.

2. Sewer pipes furnished under these specifications shall be of a single class to be designated "Standard Sewer Pipe."

I. MATERIAL AND MANUFACTURE

3. (*a*) Clay sewer pipes shall be manufactured from clay, fire clay, or shale, or a combination of these materials.

(*b*) *Clay.*—Clay is intended to mean red burning plastic clay devoid of fissile fracture with maturing temperature about 1,170° C. (2,138° F.)

(*c*) *Fire Clay.*—Fire clay is intended to mean buff, gray or reddish burning fire clay showing conchoidal structure, with maturing temperature about 1,250° C. (2,282° F.)

(*d*) *Shale.*—Shale is intended to mean red burning hard clay with a distinct fissile fracture and vitrifying at from 1,050 to 1,250° C. (1,922 to 2,280° F.)

(*e*) The physical and chemical properties of these materials shall be such that when molded into pipes and subjected to a suitable temperature the product will be strong, durable, and serviceable, and free from objectionable defects, in substantial compliance with these specifications and tests.

II. CHEMICAL TESTS AND REQUIREMENTS

4. The purchaser or consumer may prescribe in advance special chemical requirements in cases where industrial wastes have marked acid or alkaline character, or are of abnormally high temperatures. He may make use of chemical analysis of the pipe material to ascertain whether these special requirements are met. The presence of visible grains or masses of caustic lime, iron pyrites, or any other materials which cause slaking or distintegration shall be a cause for rejection.

III. PHYSICAL TESTS

5. The physical tests of sewer pipes shall include: crushing tests, hydrostatic pressure tests, and absorption tests.[1]

6. The specimens to be tested shall be selected by the purchaser or his representative at the point or points designated by him when placing the order. The manufacturer or seller shall furnish specimens for test, without separate charge, up to one per cent. of the number of pipes to be delivered or furnished in each size of pipe. The minimum number of specimens for any delivery less than 200 pieces shall be two specimens in each size of pipe.

7. Failure of 20 per cent. of the specimens to substantially meet the requirements of any of the tests imposed, shall result in rejection of all the pipe in the shipment or delivery, corresponding to the sizes thus failing to comply, except that in the event of 20 per cent. of the specimens in any size failing to meet the requirements, the manufacturer or seller may, with the consent of the purchaser or consumer, furnish for test additional specimens for the same shipment without charge. In case more than 80 per cent. of the specimens tested, including these first tested, shall show substantial compliance for each of the various tests performed, then the entire shipment or delivery for this size shall be accepted, otherwise it shall be rejected.

8. The specimens of pipes shall be sound, full-size pipe. They shall first be freed from all visible moisture. When dry each specimen shall be weighed, measured and inspected. The results of these observations shall be recorded and preserved as shown in Table I.

9. Specimens which, when placed in a vertical position, do not give a metallic ring when struck with a hammer, or are observed to have fire cracks or other defects in form or dimensions in excess of the limits permitted in these specifications, shall be discarded and replaced with additional specimens from the shipment.

---

[1] Committee C-4 will prepare a specification for an abrasion test.

CRUSHING TESTS

10. (*a*) Any prime mover or hand power which will apply the load at a uniform rate of about 2,000 lb. per min., or in increments of not more than 100 lb. at the same rate, may be used in making the test.

(*b*) The pipe shall not be allowed to stand under load longer than is required to apply the load and to observe and record it.

(*c*) The testing machine shall be substantial and rigid thruout, so that the distribution of the load will not be affected appreciably by the deformation or yielding of any part.

(*d*) The bearings and the specimen shall be accurately centered so as to secure a symmetrical distribution of the loading on each side of the center of the pipe in every direction.

(*e*) The load shall be applied until the pipe yields by cracks passing through the shell.

11. (See Fig. 1, Plate I.).—The pipe to be tested shall be supported by a metallic knife-bearing 1 in. wide and extended from a point just back of the hub to the spigot end of the pipe. Before the pipe is placed, a fillet of plaster of Paris and sand 1 in. wide, and thick enough to compensate all the inequalities of the pipe barrel, shall be cast on the surface of the knife-edge bearing. The pipe shall be placed upon the fillet while the plaster of Paris is still somewhat plastic. The load shall be applied through an upper knife-edge bearing of the same size and length as the lower bearing. A plaster of Paris fillet 1 in. wide shall be cast along the length of the crown of the pipe to equalize the bearing before the upper knife edge is brought into contact.

Both of the knife edge bearings shall be sufficiently rigid to transmit and receive uniform loads thruout their lengths without deflection, and shall be so attached to the machine as to transmit and receive the maximum stresses produced by the tests without lost motion, vibration or sudden shock.

At the option of the purchaser or consumer the crushing test may be applied with sand bearings or with three-point bearings.

THREE-POINT BEARINGS

12. (See Fig. 2, Plate I.).—When three-point bearings are used, the ends of each specimen of tile shall be accurately marked in halves of the circumference prior to the test.

The lower bearings shall consist of two wooden strips with vertical sides, each strip having its interior top corner rounded to a radius of approximately ½ in. They shall be straight, and shall be securely fastened to a rigid block with their interior vertical sides 1 in. apart.

The upper bearing shall be a wooden block, straight and true from end to end.

The test load shall be applied through the upper bearing block in such a way as to leave the bearing free to move in a vertical plane passing midway between the lower bearings.

In testing a tile which is "out of straight," the lines of the bearings chosen shall be from those which appear to give most favorable conditions for fair bearings.

SAND BEARINGS

13. (See Fig. 3, Plate I.).—When sand bearings are used, the ends of each specimen of tile shall be accurately marked in quarters of the circumference prior to the test. Specimens shall be carefully bedded, above and below, in sand, for one-fourth the circumference of the tile measured on the middle line of the wall. The depth of bedding above and below the

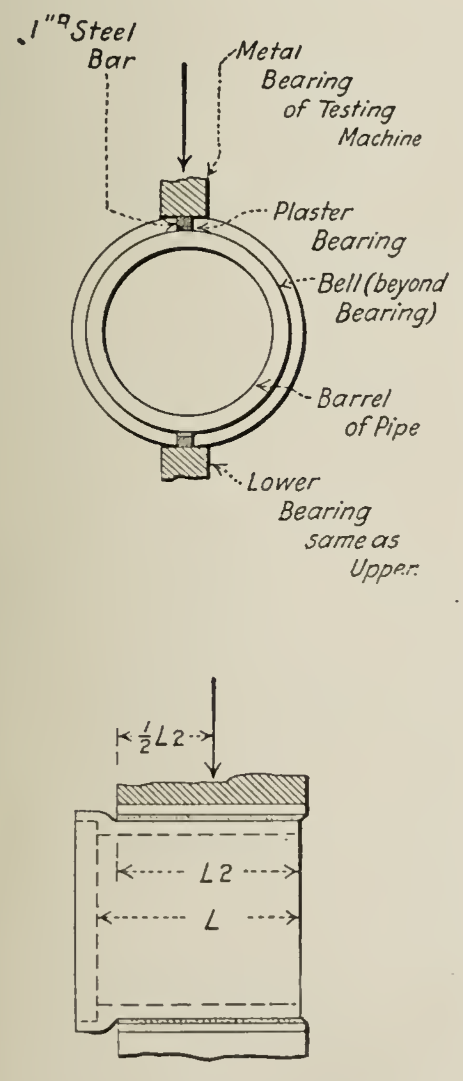


Fig. 1. Knife-Edge or Two-Point Bearings

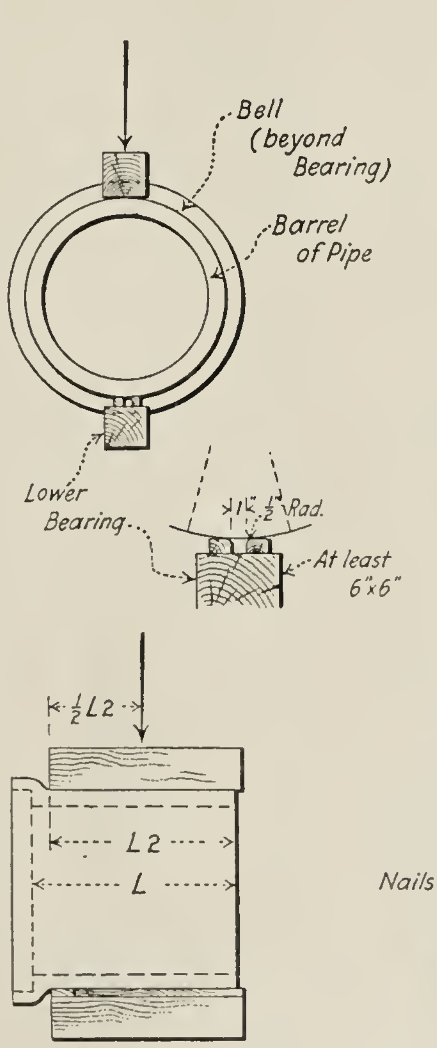


Fig. 2. Three Point Bearings

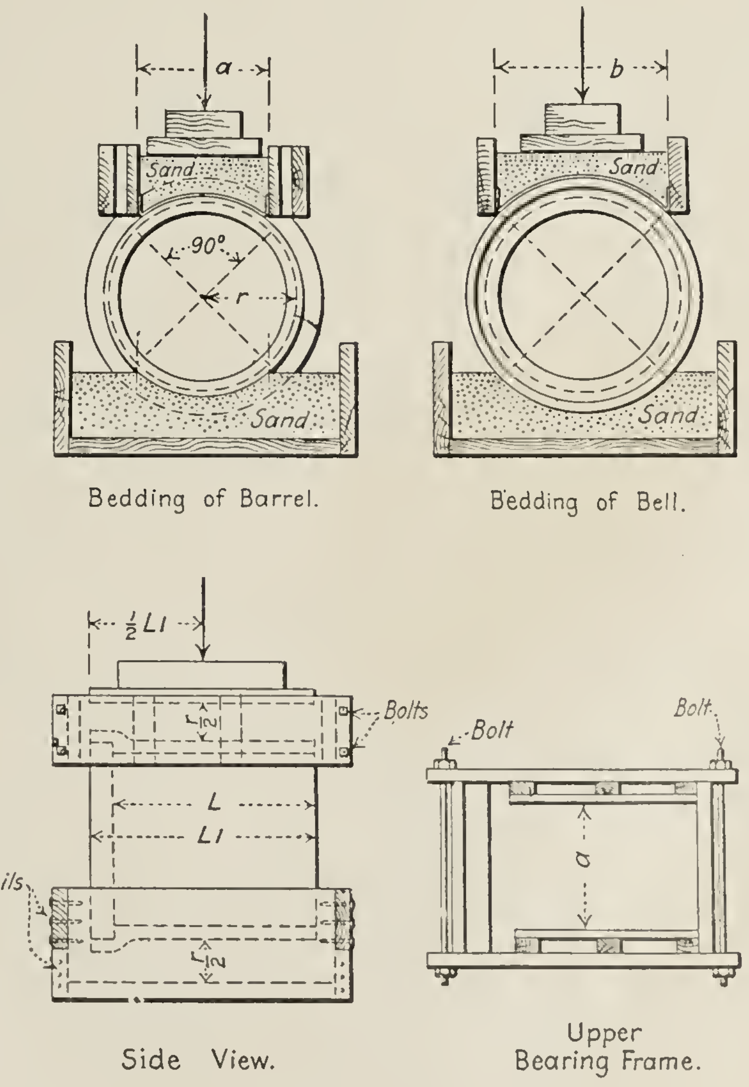


Fig. 3. Sand Bearings

Table I.—Size of Clay Sewer Pipe Furnished as Test Specimens

Specimen No.	Date.	Job No.	Material.	Manufacturer.	Location of Factory.	Nominal Size, in.	Weight, lb.	Length, ft.	Thickness of Spigot, in.				Thickness of Hub, in.				Internal Circular Diameter, in.						Remarks.
																	Spigot.		Back of Hub.		Hub.		
									Invert.	Crown.	Side.	Side.	Invert.	Crown.	Side.	Side.	Vertical.	Horizontal.	Vertical.	Horizontal.	Vertical.	Horizontal.	

tile at the thinnest points shall be one-half the radius of the middle line of the wall.

The sand used shall be clean, and shall be such as will pass a No. 4 screen.

The top bearing frame shall not be allowed to come in contact with the tile nor with the top bearing plate. The upper surface of the sand in the top bearing shall be struck level with a straight edge, and shall be covered with a rigid top bearing plate, with lower surface a true plane, made of heavy timbers or other rigid material, capable of distributing the test load uniformly without appreciable bending. The test load shall be applied at the exact center of this top bearing plate, in such a manner as to permit free motion of the plate in all directions. For this purpose a spherical bearing is preferred, but two rollers at right angles may be used. The test may be made without the use of a testing machine, by piling weights directly on a platform resting on the top bearing plate, provided, however, that the weight shall be piled symmetrically about a vertical line through the center of the tile, and that the platform shall not be allowed to touch the top bearing frame.

The frames of the top and bottom bearings shall be made of timbers so heavy as to avoid appreciable bending by the side pressure of sand. The interior surfaces of the frames shall be dressed. No frame shall come in contact with the tile during the test. A strip of cloth may, if desired, be attached to the inside of the upper frame on each side, along the lower edge, to prevent the escape of sand between the frame and the tile.

14. The crushing test shall ordinarily be applied to not less than 75 per cent. of the specimens received for testing purposes.

15. Pieces of the crushed pipe may be used as specimens in making the absorption test.

HYDROSTATIC TESTS

16. Sound full-size pipe not exceeding about 25 per cent. of the specimens received for test in each size of pipe, shall be tested for leakage under internal hydrostatic pressure.

The ends of the pipe shall be tightly closed by wooden or metallic bulkheads or covers faced with rubber or leather so that no leakage shall occur through the covers at the test pressure. One cover shall be provided with a ¾-in. wrought-iron nipple passing through the cover, and held securely in place and made water-tight by means of locknuts and washers or gaskets. The outer end of the nipple shall be connected to a pump discharge or water service line.

Water pressure of 5 lb. per sq. in., as measured by a standardized gauge attached to the delivery pipe close to the specimen, shall be internally applied to the specimen for 5 minutes. At the end of this period the water pressure shall be raised to 15 lb. per sq. in. and maintained for a period of 15 minutes.

The quantity of water passing through the shell of the specimen at 15 lb. per sq. in. shall be collected and measured at the end of the test. The result shall be reported as percolation in gallons per mile in 24 hours.

ABSORPTION TESTS

17. The specimens shall be sound pieces, with all edges broken, from pipes broken in the crushing or other tests. They shall be from 12 to 20 sq. in. in area, and shall be as nearly square as they can be readily prepared. They shall be free from observable cracks, fissures, laminations or shattered edges.

18. Preparatory to the absorption test, the specimen shall be first weighed and then dried in a dryer or oven at a temperature of not less than 110° C. (230° F.) for not less than three hours. After removal from the dryer, the specimen shall be allowed to cool to a temperature of 20 to 25° C. (68 to 77° F.), and then reweighed.

If the specimen was comparatively dry when taken, and the second weight closely agrees with the first, it shall be considered dry. If the specimen was known to be wet when taken it shall be placed in the drier for a further drying treatment of two hours, and reweighed. If the third weight checks the second the specimen shall be considered dry. In case of any doubt, the specimen shall be redried for two-hour periods, until check weights are obtained.

19. The balance used shall be sensitive to 0.5 g. when loaded with 1 kg., and weighings shall be read to the nearest gram. When other than metric weights are used, the same degree of accuracy shall be obtained.

20. The specimen, after final drying, cooling and weighing, shall be placed with other similar specimens in a suitable wire receptacle, packed tightly enough to prevent jostling, covered with distilled water or rainwater, raised to the boil-

Table II.—Physical Test Requirements of Clay Sewer Pipe

Internal Circular Diameter, in.	Minimum Crush Strength, lb. per lin. ft.		Maximum Percolation, gal. per mile in 24 hr.	Maximum Absorption, per cent.
	Knife-Edge and Three-Point Bearings.	Sand Bearings		
6	1000	1430	These requirements will be furnished later.	5
8	1000	1430		5
10	1100	1570		5
12	1200	1710		5
15	1370	1960		
18	1540	2200		5
21	1810	2590		
24	2150	3070		5
27	2360	3370		5
30	2580	3690		5
33	2750	3930		5
36	3080	4400		5
39	3300	4710		5
42	3520	5030		5

ing point and boiled for five hours, and then cooled in water to a final temperature of 10 to 15° C. (50 to 59° F.)

21. The specimen shall then be allowed to drain for one minute, the superficial moisture removed by towel or blotting paper, and then placed upon the balance.

22. The test result shall be calculated as percentage of the initial dry weight.

23. One specimen shall be tested for each pipe from the crushing test.

24. The results shall be reported separately for each individual specimen, together with the mean for all the specimens from the same shipment of pipe.

25. Each specimen shall be marked so it may be identified with the pipe used in the crushing test from which the specimen was taken. The marking shall be applied so that the pigment used shall not cover more than one per cent. of the total superficial area of the specimen.

IV. PHYSICAL TEST REQUIREMENTS

27. The test requirements of clay sewer pipe shall be as given in Table II. The individual results of the various tests for each size of sewer pipe and for each shipment class and mill shall be tabulated separately so as to show the percentage which fails to substantially comply with the requirements of each test.

V. STANDARD SIZES AND DIMENSIONS

28. Sewer pipes shall be furnished of the sizes, internal circular diameter, and with the minimum dimensions given in Table III.

Table III.—Sizes and Dimensions of Clay Sewer Pipe.

D Internal Circular Diameter, in.	*L* Laying Length, ft.	*H* Diameter at Inside of Hub, in.[1]	*S* Depth of Hub, in.	*B* Taper of Hub.	*T* Minimum Thickness of Shell, in.
6	2	8¼	2	1:20	⅝
8	2, 2½, 3	10¾	2½	1:20	¾
10	2, 2½, 3	13	2½	1:20	⅞
12	2, 2½, 3	15¼	3	1:20	1
15	2, 2½, 3	18¾	3	1:20	1¼
18	2, 2½, 3	22¼	3	1:20	1½
21	2, 2½, 3	26	3½	1:20	1¾
24	2, 2½, 3	29½	3½	1:20	2
27	3	33¼	4	1:20	2¼
30	3	37	4½	1:20	2½
33	3	40¼	5	1:20	2⅝
36	3	44	5	1:20	2¾
39	3	47¼	5	1:20	2⅞
42	3	51	5	1:20	3

[1] When pipes are furnished having an increase in thickness over the dimensions given in column T, then the diameter of hub H shall be increased by an amount equal to twice the increase of thickness of shell.

29. The permissible variation from the dimensions given in Table III shall not exceed those stated in Table IV. Where the thickness of shell (*T*) is increased beyond that given in Table IV in order to meet the specified requirements of strength, the diameter of inside of hub (*H*) shall be increased by double the increase in thickness of shell. Pipes intended to be straight shall not have variation in alignment of more than ⅛ in. per foot of length.

VI. WORKMANSHIP AND FINISH

30. Sewer pipes shall be substantially free from fractures, large or deep cracks and blisters, laminations and surface roughness.

31. The inner surface of the hub and the outer surface of the spigot end shall be scored by triangular shaped or semi-circular shaped rings about ⅛ in. deep.

The number of scorings shall be as follows:

For pipes 6 to 10 in. in diameter, inclusive	2
For pipes 12 to 21 in. in diameter, inclusive	3
For pipes 24 to 30 in. in diameter, inclusive	4
For pipes 33 to 42 in. in diameter, inclusive	5

32. The glaze shall consist of a continuous layer of bright or semi-bright glass substantially free from coarse blisters and pimples. If present none of these shall project more than ⅛ in. above the surrounding surface. Not more than 10 per cent. of the inner surface of any pipe shell shall be bare of glaze except the hub, where it may be entirely absent. Glazing will not be required on the outer surface of the shell at the spigot end for a distance from the end equal to two-thirds the specified depth of hub for the corresponding size of pipe. Where glazing is required there shall be absence of any well-defined net work of crazing lines or hair cracks. All glazing shall be equal to that produced by the best salt-glazing process.

Table IV.—Permissible Variations in Dimensions of Clay Sewer Pipe

Normal Size, inches.	Length, in. per ft. (—)	Permissible Variation in Internal Circular Diameter, in.		Depth of Hub, in. (—)	Thickness of Shell, in. (—)
		Spigot (±)	Hub (±)		
6	⅛	3/16	¼	¼	1/16
8	⅛	¼	5/16	¼	1/16
10	⅛	¼	5/16	¼	1/16
12	⅛	5/16	⅜	¼	1/16
15	⅛	5/16	⅜	¼	3/32
18	⅛	⅜	7/16	¼	3/32
21	⅛	7/16	½	¼	⅛
24	⅛	½	9/16	¼	⅛
27	⅛	⅝	11/16	¼	⅛
30	⅛	⅝	11/16	¼	⅛
33	⅛	¾	13/16	¼	3/16
36	⅛	¾	13/16	¼	3/16
39	⅛	¾	13/16	¼	3/16
42	⅛	¾	13/16	¼	3/16

NOTE.—The minus sign indicates that variation is limited to deficiency in dimension; the plus and minus sign indicates variation in both excess and deficiency in dimension.

33. The ends of the pipes shall be square with their longitudinal axis.

34. Special shapes shall have a plain spigot end and a hub end corresponding in all respects with the dimensions specified for sewer pipes of the corresponding internal diameter. Branches shall be furnished to lay the same length as straight pipe. All specials shall conform in finish to specifications for sewer pipes as given in Sections 30, 31, 32 and 33.

(*a*) Slants shall have their spigot ends out at an angle of approximately 45 deg. with the longitudinal axis.

(*b*) Curves shall be at angles of 45, 22½, 11¼ deg., etc., as required. They shall substantially conform to the curvature specified.

(*c*) Branches shall be furnished with the connection or connections of the size or sizes specified, securely and completely fastened by fusion in the process of vitrification to the barrel of the pipe. T-branches and double T-branches shall have their axes approximately 45 deg. from the axis the pipe. Y-branches, double Y-branches, and V-branches shall have their axes approximately 45 deg. from the axis of the pipe measured from the hub end. All branches shall terminate in hubs and the barrel of the branch shall be of sufficient length to permit making a proper joint when the connecting pipe is inserted in the branch hub.

(*d*) Channel or split pipe, curves and branches shall be accurate half sections of the corresponding size of pipe or other specials.

VII. MARKINGS

35. Sewer pipes shall bear the initials or name of the person, company or corporation by whom they are manufactured, and the location of the mill. The markings shall be indented on the exterior of the barrel near the hub and shall be plainly legible for purpose of identification.

VIII. INSPECTION

36. All sewer pipes shall be subject to inspection at the factory, trench or other point of delivery by a competent inspector employed by the purchaser or consumer. The pur-

(Continued on Page 247)

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

Article Three, Dealing With the Classification of Rates and of Freight Classifications, the Basis of Rates

By Sydney A. Hale

In the preceding articles, the general principles of rate regulation and rate standards were summarized. The present article treats of the classification of rates and of freight classifications, which are the basis of all rates.

THE MODE OF MAKING RATES by classification is intended for the convenience of railroads and accommodation of shippers and long experience has shown that it is the best and most practical way yet devised for dealing with the subject.—Pyle v. E. T. V. & G. Rd. Co., 1 I. C. C., 473.

GENERAL CLASSIFICATION OF RATES

The rates and regulation of a railroad naturally divide themselves into two groups. The line of demarcation is found in the broad definition of "transportation" embodied in the Act to Regulate Commerce. First, and of most general importance, we have rates for that service that is "transportation" in the narrow sense of a carriage from one place to another. This, in traffic phraseology, is road-haul service. Second, we have rates and regulations governing the special services and privileges which are incidental to "transportation" in its popular and restricted meaning, but part of that service as it is legally defined. These latter rates may be called rates for accessorial services. Included under this head come terminal services, such as switching and demurrage, and transit privileges, such as milling, concentration, reconsignment, and diversion.

There are three factors common to the integrity of every road-haul rate. The application of every such charge must be considered from the standpoint of:

1. The articles of commerce to which it applies;
2. The quantity of freight to which it applies;
3. The points of origin and destination between or from and to which it applies.

Insofar as the application relates to the articles of commerce moved under such rates, rates are either class or commodity. From the quantitative standpoint, rates are either carload (generally abbreviated to C. L.), less-than-carload (generally abbreviated to L. C. L.), or any quantity rates (generally abbreviated to A. Q.). From the territorial side, rates are either local—if applied only to and from stations located upon one and the same line of railroad—or thru—if covering traffic between points upon two or more lines. Local and thru rates may be specific in that the points from and to which they apply are definitely named, or they may be upon a distance tariff basis in which case the charges are for transportation specified distances, as five, ten or 100 miles instead of between specified stations. Thru rates may be either joint or combination rates. Combination charges may be composed of strictly local, joint, or proportional rates or of combinations of any or all of such rates. Consideration will now be directed to those factors common to all road-haul rates.

RATES FOR ALL COMMODITIES MUST BE PROVIDED

While a railroad might by charter incorporate to handle only certain kinds of freight, in practice this is seldom done. Good business judgment in the first instance and the mandates of the Act to Regulate Commerce in the second demand that provision be made for the rates for the transportation of all classes of freight. The number of articles that are transported from place to place to serve the commercial needs of the country, however, runs into the thousands. "Carriers," says the Interstate Commerce Commission, "are prohibited from carrying any traffic except under tariffs provided in the manner prescribed by law." If the burden of publishing tariffs naming rates on every one of the thousands of articles ordinarily transported in the course of a year's business were placed upon every carrier, the size of the individual rate issues would be staggering, the expense out of all proportion to any fancied benefits and the inevitable variations between different tariffs of the same road and the tariffs of different roads for the same service so multitudinous as to plunge the individual shipper into hopeless perplexity.

This problem is cared for thru the medium of what are known as freight classifications. For classification purposes, the country has been roughly divided into three unequal parts. That portion of the United States lying east of Lake Michigan and the Illinois-Indiana state line, south of the Canadian border and north of the Ohio and Potomac rivers is called Official Classification territory. That part of the country south of the southern boundary of Official Classification territory and east of the Mississippi River is called Southern Classification territory, while west of the boundaries of the two territories named lies the third and largest division, Western Classification territory.† There are also certain state classifications, but as their application is limited and largely local, they are excluded from present consideration.

Carriers serving the different territories named have formed committees and have given certain men power of attorney to act as their agents. These agents are known as the chairmen of their respective classification committees. The committees have taken the various articles of commerce and placed them, for rate-making purposes, into various groups called classes. Official Classification carries fifteen classes. There are six basic classes, num-

(Continued on Page 254.)

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Precautions in Fuel-Oil Storage*

SYNOPSIS—Insurance records show that the number of fires in oil-storage plants is no greater than in plants using coal. The mains to large storage tanks are used to ground the tanks for protection against electrical storms. Underground tanks inclosed in fireproof material are most desirable for storage in small plants. All oil should drain back into the tank. Tanks are provided with automatic fire extinguishers,

WE WILL CONSIDER fuel oil only, not crude oil, which is sometimes used. The latter is much more hazardous from an insurance viewpoint, containing volatiles such as gasoline, and is an unrefined oil. Fuel oil, for burning purposes, should have a flash point of not less than 150 degrees Fahr. That in common use averages 160-175 degrees Fahr., and the burning point is about 220 degrees. It is of such a dense nature that it is necessary to heat it by steam coils placed in the tank before it can be successfully pumped and burned. It is of an asphaltum base.

It may be of interest to first briefly describe the method of storage of fuel oil, taking a large local station as an example. Oil is stored in steel riveted tanks of large capacity. The tops are covered with tight steel roofs. Each tank is provided with a vent pipe which is screened at the outlet. Each tank is surrounded by an earthen and concrete embankment forming an inclosure of more than sufficient size to hold the entire contents of the tank in case of rupture thereof. The mains, thru which the oil is pumped to the tank, run under the earth and are relied upon to furnish grounding and thus protect the tanks during electrical storms

Each tank is also provided with an automatic fire extinguisher, a new and very efficient extinguisher for fires in volatile substances, the discharged fluid being of a soapy nature, spreading over the surface of the oil upon release by the automatic device, thus cutting off any air supply and preventing further combustion. Steam coils at the bottoms of the tanks keep oil at the proper temperatures for pumping. There is the necessary boiler house for furnishing this steam and the steam for pumping to tank cars on the adjoining spur track and to the tank trucks.

HIGH AND LOW PRESSURE SYSTEMS

There are two types of equipment in use—the low and the high-pressure systems. The former is usually installed where steam pressures not exceeding ten or fifteen pounds are required and the latter where higher steam pressures are needed. The usual low-pressure burner used in this locality is of a rotary type, set in the furnace of the boiler, surrounded by a firebrick lining, the rapid rotation of the burner atomizing the oil, and a small electric motor pumps the oil from the supply tank to the burner. In high-pressure systems the oil is forced by a steam pump to the burners, where steam is also admitted, vaporizing the oil, the force of the steam driving the flame generated into the firebox, the burner being located outside of, or at the front of the furnace.

TREATMENT OF STORAGE TANKS

The storage of oil in buried metal tanks is generally far distant from any building. The tanks vary in thickness from No. 14 U. S. gauge metal for 500-gallon sizes to one-fourth inch for sizes above 500 and up to 5,000 gallons, and they are tar coated on the outside for protection against rust. They are usually three feet below the level of the ground, and they must be below all pipes running to the burners in boilers, so that all surplus oil will drain back to the tanks when the pumps have been shut down. Should the tank not have been burned deep enough to locate the top of it below the pump and burners, the suction pipe from tank to pump must enter the tank at the top, in which case the only oil not draining back would be that between the elbow in the suction pipe at the top of tank and the burners, and should be beneath the floor and protected from mechanical injury.

Vent pipes are required on all tanks. Small tanks may have a combined filling and vent pipe so arranged that the filling pipe cannot be opened without opening the vent pipe, and these pipes then terminate in a locked metal box. When a tank of a larger capacity than 1,000 gallons is used, it must have a vent pipe at least one inch in size, extending at least twelve feet above the ground, terminating in a screened gooseneck fitting. This fitting must not be near a window where escaping vapors could find entrance, or from which window fire might be communicated to the vapor by an open light. The screen would prevent a flareback into the tank in case of ignition of vapor at the terminal of the vent pipe. Venting into boiler stacks has also recently become common practice.

All pipes for filling tanks which are located under floors of buildings and which run underground from the tanks to the filling caps outside must pitch toward the tanks.

Indicators are desirable for showing the depth of oil in tanks, but when used only those of a type which minimizes the exposure of the oil are allowed, and any device that would allow escape of oil when broken would not be approved.

Glass gauges are not approved, but if absolutely necessary, substantial protection against breakage is required. No pet-cock can be used on any part of the oil-conveying system. This is to prevent any drip from being carelessly left open.

HANDLING THE LOW-PRESSURE SYSTEM

In the low-pressure system a small electric motor forces the oil tanks into the rotary burners. In the hot-air pipe there is a thermostat control so designed that should the flame at the burner be extinguished while the motor is run-

---

*Abstract of a paper read by P. A. Colwell before the Providence Engineering Society, Providence, R. I., appearing in a recent issue of "Power."

You Should Know of the Many Advantages of
THE POTTS SPECIAL
A Soft Mud Brick Machine
Self Striking—Horizontal—for Common and Fire Brick
Ask Us for Details and Names of Users
C. & A. POTTS & CO., Indianapolis, Ind.

MORE WORKING CAPITAL
or do you want to expand, to improve a good plant? We specialize in clay plant properties, arrange for the issuance and sale of Bonds. We have rendered aid to many plants. Write us about your needs.
F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILLINOIS

UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket

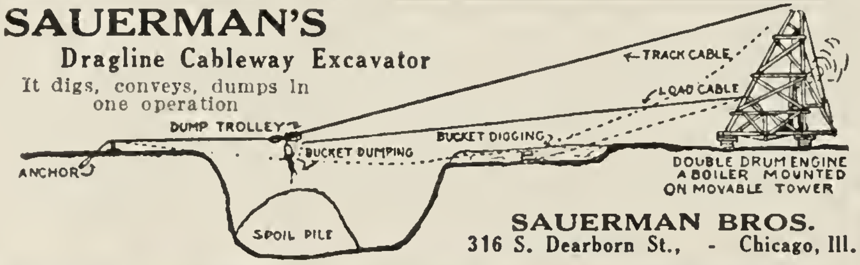
Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used. Sprockets, Buckets, Elevators, etc.—Send for Catalog
"The Chain of Double Life"
THE UNION CHAIN & MFG. CO., **SEVILLE, OHIO**

CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo, Michigan, U. S. A.

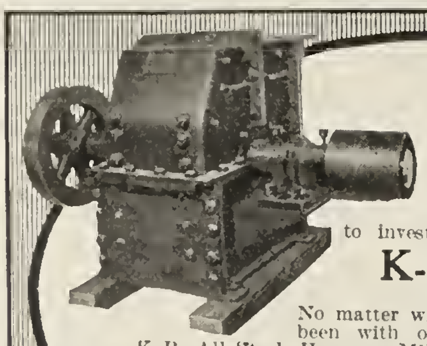
This Is the Way Your Bearings Look

To secure it you simply place a graphite sheet between the mandrel and the bearing box and pour in the babbitt. The result is a babbitt bearing impregnated with graphite spots. These bearings last from two to ten times as long on severe work.
Randall Graphite Sheet Lubricator Co., 816 W. Lake St., Chicago, Ill.

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.



It will pay *You*
to investigate the superior merits of the
K-B Pulverizer
No matter what your experience may have been with other crushing machines, the K-B All-Steel Hammer Mill will probably show you something you haven't known about pulverizing at low cost.
Built for Service and Durability.
Send for catalog now.
K-B Pulverizer Co., Inc.
86 Worth St., N. Y.

ning, the cooling down would result in the shutting down of the motor within two minutes, the thermostat control throwing the rheostat to the first position. The height of the flame is regulated by a valve, and the pressure on the system is regulated by another valve placed on the return pipe to the tank from the pump, the closing down of which increases the pressure to the desired point. There is also an automatic control valve governing the oil supply to the burner, it being connected to the usual automatic damper control of the boiler by a rod, this device keeping the building at the desired temperature, the damper-control balanced rod being fitted with weights on one end.

In a high-pressure system a duplex steam pump is used to convey the oil from the tank to the burners. These pumps are fitted with relief valves so that should the pressure generated on the oil exceed the usual 25-30 pound, the surplus oil is discharged back into the tank through the return circulation pipe from the burners.

In case the tank has not been placed below the burners, but has been placed in an approved inclosure (as previously described) and the top of the tank is higher than the pump, the feed pipe from tank to pump is required to enter the tank at the top, thence extending to the bottom, to avoid gravity feed from tank to pump.

Shutoff valves are installed on feed and circulating pipes as near the tank as possible. They are also required on each burner. In high-pressure systems a steam governor is installed at each burner to maintain even pressure. Piping from tanks to pumps and burners must be carefully installed, made tight, and must be exposed as little as possible to mechanical injury.

The burners should be large enough to furnish only sufficient oil for the maximum burning conditions, with control valve wide open. Burners containing oil-carrying parts or parts subject to intense heat should not be used, and burners should be of such design as to allow easy cleaning.

⁂

Satisfactory Mortars for Kiln Masonry

A good mortar for bonding brick in the various parts of a kiln is often a very hard material to get. Mixtures which have been found very satisfactory in an Illinois paving brick factory are reported as follows:

For the outside wall of a rectangular kiln a mortar made by mixing together one wheelbarrow of sand (made from grog obtained from paving brick culls), one wheelbarrow of shale and two sacks of Portland cement.

For a suitable mortar to use about the fire-boxes take four shovels full of Missouri fire clay and three shovels full of the same sand as used in above mixture.

⁂

Cost of Excess Packing Friction

The function of packing around a piston rod is to save money by preventing steam from leaking out. It is a plausible function. But there are two general classes of packing —good and bad. Both of them may be perfectly steam tight, yet the one may create much more friction than the other. As a result, the power loss due to this friction may develop into a surprising amount per year. If the packing is a "cheap" one, it can be demonstrated that the money lost thru its use is sufficient to buy a good packing many times over.

A good test for packing is the "fly wheel test." It is based on the fact that when a fly wheel runs at normal speed, it contains a constant amount of energy. That energy may be computed by use of the formula

$$E = \frac{W V^2}{2g}$$

where W is the weight of the fly wheel rim in pounds, V is the velocity of the rim in feet per second, and g is equal to 32.16.

Now, close the throttle valve of the engine and the fly wheel will continue to run for a while. The greater the friction to be overcome per second, the shorter will be the stopping time; the less the friction, the longer the stopping time. If there were no friction to be overcome at all, the fly wheel would keep the engine running forever, and at the original normal speed.

These things being true, it is now clear that a "good" packing will permit the fly wheel to run for a longer time than will a "poor" packing. Bearing these several things in mind, a formula may be derived that gives the cost of unnecessary friction per year.

Unnecessary expenditure for packing friction per year:

$$\frac{\$ \times W V^2 \times N}{17{,}600} \quad \frac{(G - P)}{(G \times P)}$$

where

$\$$ is the cost of a horsepower-hour in dollars.
W = the weight of the fly wheel in pounds.
V = velocity of the fly wheel rim in feet per second.
G = the number of seconds required for the fly wheel to come to a dead stop after the throttle valve is closed with the "good" packing in place.
P = the number of seconds required for fly wheel to come to a dead stop after the throttle valve is closed with the "poor" packing in place.
N = number of running hours per year.

For example if the cost of your power averages $0.013 per horsepower per hour; if you run 3,650 hours per year; if the fly wheel weighs 3,000 pounds; if the fly wheel velocity is 5,000 feet per minute, or 83.3 feet per second; if the stopping time with good packing is 75 seconds and with poor packing 68 seconds, what is the cost of the unnecessary friction per year?

Substituting in the formula we get:

$$\frac{\$0.013 \times 3{,}000 \times 83.3 \times 83.3 \times 3{,}650}{17{,}600} \quad \frac{(75 - 68)}{(75 \times 68)} = \$77.30$$

One can purchase a goodly quantity of packing for $77.30—enough to last for a number of years. A great deal of good can be accomplished with that amount of money. Some readers may say, "it's an absurd amount. Such a loss due to poor packing is impossible from the standpoint of friction alone. There is something wrong with the formula." The formula, however, is based on good engineering logic, on actual experiments conducted with engines.—*W. F. Schaphorst.*

⁂

Drying Floors for Fire Brick

In discussing the relative merits of different types of fire brick drying floors, heated by steam passing underneath, "The Brick and Pottery Trades Journal," an English publication, states that the greatest drawbacks of wood are that it is a very poor conductor of heat, and it usually twists badly, giving a very unsatisfactory surface on which to lay and dry the brick. Iron floors are excellent conductors of heat, but they usually cause the brick to be heated too rapidly and then crack. Moreover, the iron is non-porous and does not dry the bottom of the brick satisfactorily. Among other materials, fire clay slabs and concrete are among the best. A floor covered with fire clay slabs two inches thick, with a one and one-half inch layer of cement-sand concrete above it, is as good as can be obtained for this class of work.

CRESCENT
BELT FASTENERS

They can't wear out. No wearing parts. They don't touch the pulley. Nothing to wear.

Why not write for the Belt Man's Chart No. 4, which tells how to use them?

CRESCENT BELT FASTENER CO.
381 Fourth Avenue New York

BLACK
Speckled Brick
or Grey Tones

Crimora Manganese Dioxide produces any grey-black facing that you need for your brick. Obtained in any grade or size from

Crimora Manganese Corporation
30 East 42d Street NEW YORK

Blasting without using the
CYCLONE DRILL

is like hunting deer with birdshot. You can't possibly get good results.

We are ready to offer you facts and figures to prove that the Cyclone Drill will soon pay for itself.

Ask for names of users and Bulletin No. 4

The Sanderson-Cyclone Drill Co.
ORRVILLE, OHIO

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS

If your rate does not exceed five cents, the saving you make by installing a

HARDINGE WATCHMAN'S CLOCK

will pay for the cost of the clock the very first year.

Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

SIL-O-CEL
PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

Write nearest Office for Samples and Information

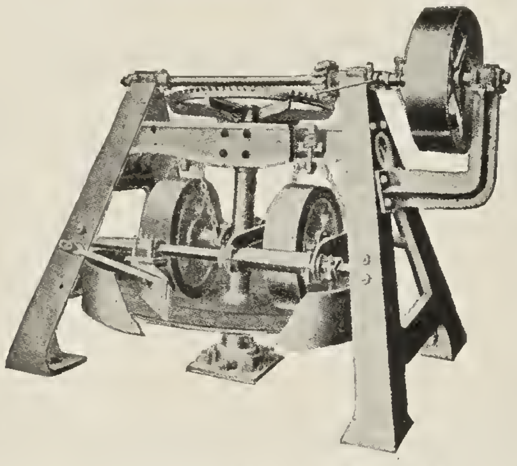
CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway · CHICAGO Monadnock Bldg · PITTSBURGH Oliver Bldg · LOS ANGELES Van Nuys Bldg · SAN FRANCISCO Monadnock Bldg

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

THE EAGLE DRY PAN



Write for Prices

EAGLE IRON WORKS DES MOINES IOWA

Base Metal Couples and Low Resistance Instruments are absolutely unfitted for use on Clay plants.

We do not and we will not sell that class of equipment for measuring temperatures exceeding red heat.

STUPAKOFF PYROMETERS

for high ranges of temperature are equipped only with rare metal couples and high resistance galvanometers. They are dependable and we guarantee satisfaction.

The Stupakoff Laboratories
Pittsburgh, Pa.

QUESTIONS

A Two Cent Stamp May Bring
You Advice That Will Stop
a Waste, Improve Your Ware
or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

Using Waste Heat from a Continuous Kiln

826. *Iowa—We are considering electrifying our plants but cannot find a way to dispose of our drying problem. We have had a proposition submitted to us which contemplates taking the heat direct from the flues of the continuous kilns into the dryer by fan and use the waste heat for drying the brick.*

The claims made for this proposition are that enough heat escapes up the stack of a kiln to dry brick successfully without removing any heat whatsoever from the chambers of the kilns themselves. This would, however, mean that the brick would be sooty and that gases would enter the dryer.

The questions which arise in our mind are these: Can this be successfully done and is there heat sufficient to dry brick? Won't the gases eat the cars and fans of the dryer? Is this a practical method, and does it cause any difficulty to be encountered in securing setters on account of the soot which would be deposited on the brick?

We now have steam dryers at these plants and our clay is fairly dense.

We presume that your problem as presented in your letter is the utilization of waste combustion gases which ordinarily are carried up the stack, and not the waste heat from the cooling brick in the kiln chambers just finished.

The ability of the combustion gases to dry the ware depends entirely upon the temperature of these gases at the time they leave the kiln or at the time they are delivered to the dryer. If a continuous kiln is operated at high efficiency the combustion gases leave the kiln at a low temperature, sometimes as low as 300 to 400 degrees Fahr. If, in your case, the temperature of the gases which you intend to utilize in drying your brick is as low as this, it would, in our opinion, practically preclude its use as a dryer gas of high enough temperature to dry the ware.

In a periodical kiln there is no doubt whatsoever that there is enough heat wasted at the stacks to dry the ware bone dry, and with an excess equal to many tons of fuel, but such a condition is an impossibility if the best results are obtained from a continuous kiln.

GASES WILL ATTACK DRYER CARS

The waste heat gases sent into the dryer will undoubtedly attack the dryer cars, and the amount of deterioration which will result will be dependent upon the amount of active acid content in the drying air, which, in turn, depends upon the amount of volatile sulphur gases in the fuel and in the clay being burned. This deterioration is, of course, in addition to the normal dryer car loss which is due to slow rusting caused by moisture and alternate heating and cooling wet metal during the car's passage thru the dryer tunnels.

The same applies to the fans, the amount of deterioration

SAY "I SAW IT IN BRICK AND CLAY RECORD"

and ANSWERS

Best Authorities in Every Clay-
working Branch are Called into
Consultation — Their Advice is
Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

---

depending, as in the case of the dryer cars, upon the acid contents in the air and, also, upon the conditions of use.

There can be no doubt that there will be a heavy accumulation of soot under the plan which you outline, which may easily cause scummed ware. It is distasteful to setters and tossers and is, therefore, particularly objectionable today when labor is—as it is.

Without knowing *all* of your conditions we do not feel safe in making a positive statement regarding the practicality of your plans, but from the information given, we believe that it is not practical—as outlined.

METHOD OF OBTAINING CLEAN HEAT

In the place of the plan outlined by you, we would suggest the following: Utilize the heat from the cooling chambers or sections *behind* the burning chambers. The heat obtained by this method is clean; it has little or no gas content, and can be taken from the cooling chambers far enough in the rear of the burning chambers so as not to interfere with the combustion, or with the forward progress of the fires. An arrangement of flues might be made parallel with the kiln leading to the dryer, to be connected to the cooling chambers by means of goose necks thru the doors of the kiln chambers. The waste heat might be conducted to the dryer tunnels by means of a duct passing over the top of the kiln chambers.

An auxiliary direct fired furnace might be necessary at times to supply the dryer with the proper amount of heat.

One plant which employs the method outlined above is the Streator (Ill.) Clay Manufacturing Co., which operates a producer gas fired continuous kiln of thirty chambers, fifteen on each side. Each side is a separate unit. The waste heat is drawn from three chambers behind the fire and enters the dryer at a temperature of 200 degrees Fahr., leaving at a temperature of 75 degrees Fahr. A fourteen-foot fan operated by a 100 h. p. motor, and run at 160 r. p. m., is used to pull the heat into the dryer. The dryer contains eighteen tracks, two tracks to each tunnel. The tunnels are one hundred feet long.

Returning to a consideration of your own particular problem we would suggest that you ascertain beforehand whether you will encounter any trouble in drying your brick by the direct waste heat method because of the density of your clay. Dense clays are oftentimes difficult to handle in waste heat dryers.

⁂

Tile Cracks Badly in Drying

826. *Illinois—We have just completed a small drain tile plant and are in sore trouble. For drying our ware we have constructed a "hot floor" of concrete, containing steam heads connected with four-inch drain tile, laid on eight-inch centers. The floor, which is heated by exhaust steam from the*

Let "Illinois" Do It
ONCE YOU USE IT, YOU WILL
NEVER BE WITHOUT IT
TRADE MARK COPYRIGHTED
ILLINOIS BOILER CLEANING COMPOUND CO.
(Incorporated)
127 N. Dearborn Street CHICAGO
Phone Superior 1211

Send for a Can Today

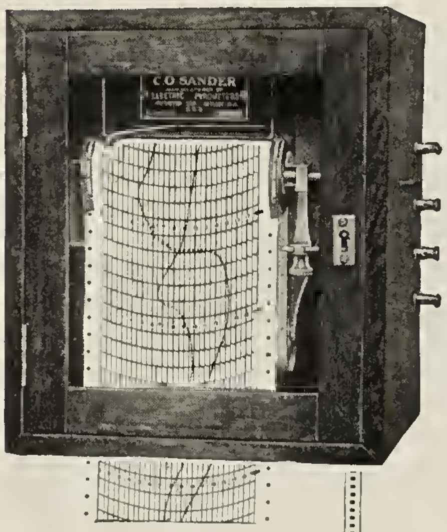
Get This Can on TRIAL

Keep your belts from slipping. Don't let them rot.

"SERO" Belt Dressing
makes them efficient.

"Sero" on your belts reduces the power consumption and prolongs the life of the belt.

Sero Specialty Co., Cleveland, O.
We also make "Sero" Gear and Cable Coating and Manila Rope Dressing.



SANDER
PYROMETERS

Surprisingly low in cost, and yet well made, sturdy and accurate.

The smallest plant can use them efficiently and many dollars will be saved in coal and labor reduction. Ask how.

The Sander Instrument Co.
136 19th Ave. Irvington, N. J.

B. & B. Two-Bucket
Aerial Tramway

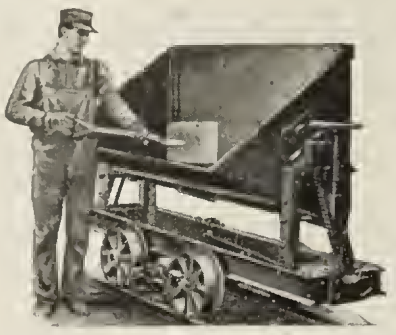
requires but one man for its operation, reduces cost of hauling clay and shale to a few cents per ton.

Outline your haulage conditions and we will gladly estimate the cost and possible savings to you.

Ask for Catalog No. 16.

Broderick & Bascom
Rope Company
St. Louis, Mo.

SAY "I SAW IT IN" BRICK AND CLAY RECORD



WATT

CARS

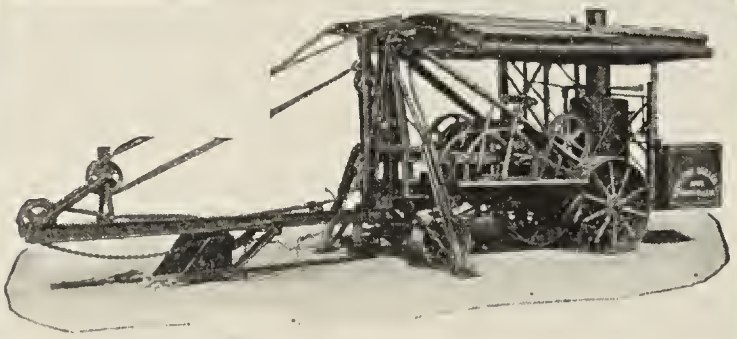
"AT FIRST OR AT LAST?"

They stand for efficiency and durability. **Ask for catalogues.**

The Watt Mining Car Wheel Co.

Barnesville, Ohio, U. S. A.

KEYSTONE



PORTABILITY

THE KEYSTONE EXCAVATOR (MODEL 3) is a light traction shovel. It weighs ten tons, wheel-base, about ten feet. Rear wheels 55-inch in diameter with 16-inch tires. Front wheels 30 inches in diameter with 10-inch tires. It has two traction speeds and will go anywhere on its own power where you could take a loaded dump wagon.

SKIMMER BUCKET ½-YARD CAPACITY. Machine will load 250 to 500 cubic yards in ten hours, operated by two men. Replaces 25 to 50 hand shovellers, has powerful crowding thrust and will dig toughest fire clay. We will furnish names of brick manufacturers, cement plants, etc., using Keystone Shovels in pits under all conditions.

You save in **first cost, up-keep, repair expense** and **moving cost.** Get from one set-up to another in quick time. No planking necessary if ground is dry and solid.

Your Engineers agree that it is good business to install two light machines in place of one heavy unit. The explanation is **PORTABILITY!**

All operations illustrated in catalog, which will be sent on request.

KEYSTONE DRILLER CO., Beaver Falls, Pa.

170 Broadway, New York City Carthage, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

engine, gets so hot that one cannot hold his hand upon it; it has ruined practically all of the ware that has been laid upon it.

We have tried to dry our ware upon it by the following methods: By placing the tile directly upon the floor; by placing sand between the ware and the floor, and by raising palets four inches, six inches, twelve inches, and two feet above the floor. In every case the ware cracks badly within an hour after it has been set. The machine makes perfect ware, at least up to eight inches, which is the largest size which we have manufactured. The clay occurs in a bed which is eight feet deep, and which begins at the grass roots. It is very tough and plastic and contains no sand, lime, gravel, or other objectionable matter so far as we can see. It pugs and works nicely thru the machine, making a perfect tile, the column standing up well and being easy to handle.

We have made about 40,000 pieces since our plant was placed in operation, and of this amount fully ninety per cent. has been ruined in the dryer on account of cracking at the ends. We have placed some pieces off the floor for air drying which have not cracked nearly so badly nor quickly as those which have been dried over the floor.

The above question, with a very comprehensive reply tracing the cause of the trouble outlined to five different sources and suggesting possible remedies for each, was published in the July 3 issue of *Brick and Clay Record.* Another Illinois manufacturer of drain tile who has had considerable difficulty in drying his product because of cracking in the dryer, sends us the following letter pointing out the method which he employed to overcome the difficulty:

"We have a hot floor and think we can help out the questioner. Everyone knows that two things are necessary for drying clay ware—heat and circulation of air. We have a clay which is very tough and which we do not dare to set onto a hot floor. At times we must close all doors and windows where too much circulation might occur.

"We feel that there are only two ways of working a clay of the character under discussion. The first, as suggested in your reply, is to add sand in the grinding process. The second is to shut off all the heat and close up all openings until the tile are at least hardened quite a little. We are fairly sure that after a few days, during which the ware has become too hard to imprint with your finger, the tile can be set down on the hot floor without danger."

* * *

Army Work Stops Louisville Building

Building activities in Louisville, Ky., have been very largely suspended pending the completion of the National Army cantonment just south of that city. Practically all of the labor supply in that section of the Ohio valley has been pre-empted by the cantonment builders and will be kept on the job steadily—seven days a week—until the camp is completed, which will be about the first of September. By that time, and during the fortnight immediately before, labor will begin to be available again and there is every indication that active building will be seen in the Kentucky metropolis in the fall. There are numerous small jobs known to be in prospect that have been delayed for the simple reason that workmen are not to be had, altho there have been assurances given that the work will be taken up at the earliest possible moment. Meanwhile the relief in the way of a lessened demand for immediate deliveries is giving the manufacturers a chance to catch up with their shipping business to points outside.

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

---

Personal

C. E. Clough, president of the Reno (Nev.) Pressed Brick Co., was in San Francisco, Cal., recently visiting the local manufacturers and dealers.

N. W. Ballantyne, fire brick salesman, of Pittsburgh, Pa., and formerly of New Cumberland, W. Va., has returned from an automobile trip with friends to Fort Niagara, N. Y.

V. H. Gerhardstein, formerly associated with the West Concord (Minn.) Brick and Tile Co., is now a member of Company L, United States Marine Corp, and is stationed at Philadelphia, Pa.

D. L. Hackett, formerly head burner of the Pennsylvania Fireproofing Co., of St. Marys, Pa., has resigned his position with that company to become superintendent of the Westbrook (Me.) Clay Products Co.'s plant.

James R. Marker, commissioner of the Ohio Paving Brick Manufacturers' Association, changed his occupation for a few days late in July and became supervisor of threshing on his extensive farm at Greenwood, Ohio, his former home.

George Weaver, for many years a clay products manufacturer of Brazil, Ind., and organizer of the Weaver Clay Works, one of the first clay manufacturing plants at that point, died recently at El Reno, Okla., at the age of seventy years.

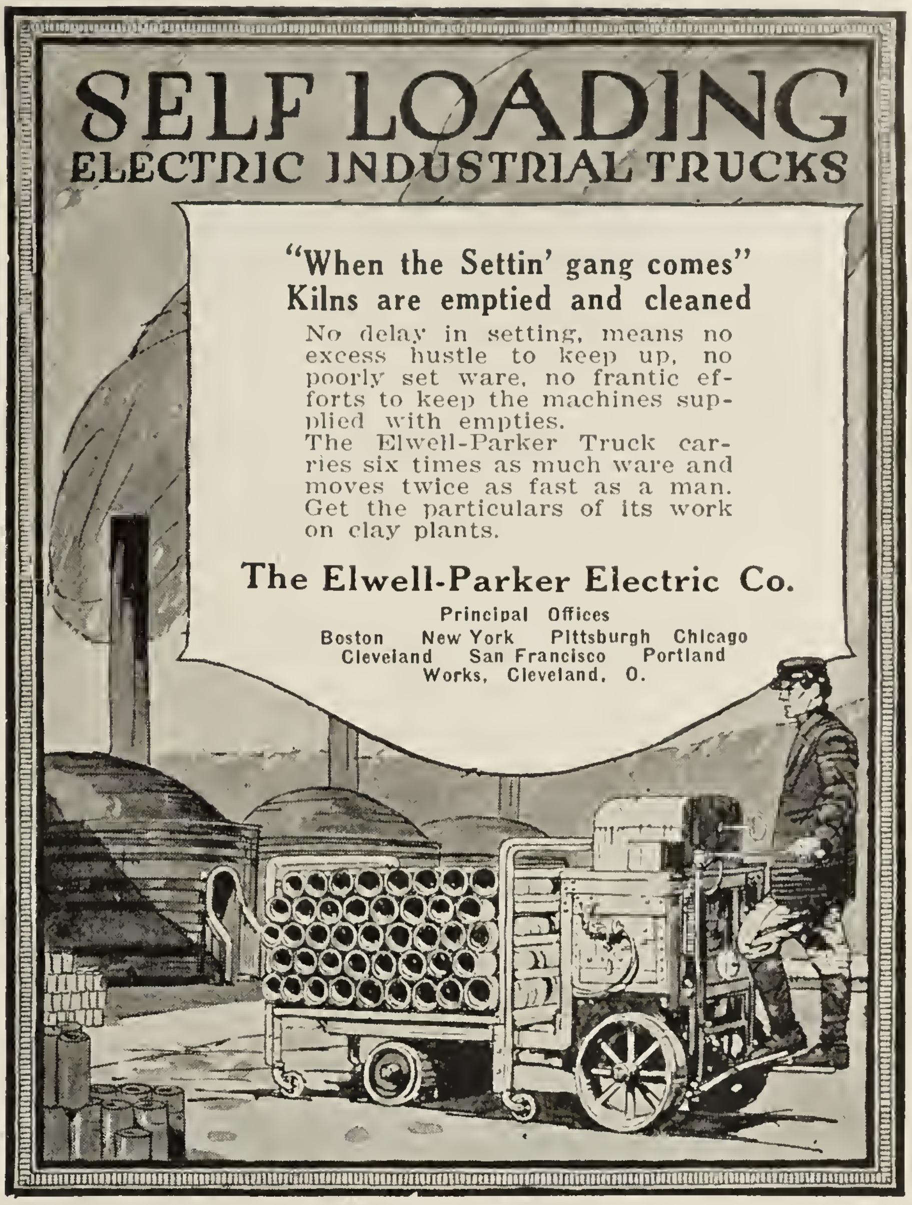
John L. Jackson, of Saginaw, Mich., president of the North Indiana Brick Company, of Michigan City, Ind., was in Michigan City last week conferring with F. C. Dall, manager of the plant. Mr. Jackson reports that the company has about all the business that it can attend to.

J. A. Terteling, of the Potlatch (Idaho) Brick Co., visited Lewiston, Idaho, recently to make arrangements for the operation of a plant which he acquired a year ago and which has not been in operation since 1910. Its capacity is 20,000 pressed brick and 32,000 common brick a day.

H. M. White, manager of the brick department of the Hocking Valley Products Co., of Columbus, Ohio, made a trip to the plant at Greendale the latter part of July. Shipments from the plant are going ahead more promptly now because of an improvement in the car supply.

W. E. Dennison, president of the Steiger Terra Cotta & Pottery Works, of San Francisco, Cal., has returned from the East, where he went on business connected with the rebuilding of the company's plant. Work on the reconstruction of the factory will be started immediately.

J. S. McCann, formerly superintendent of the Streator (Ill.) Clay Manufacturing Co. has resigned his position to apply for entrance into the next Officers' Reserve Training Camp to be started at Fort Sheridan, Ill., in the latter part of August. Before taking up the training work, Mr. McCann will spend a few weeks at his home at Junction City, Ohio. As yet no successor has been appointed for the position vacated by Mr. McCann at the plant of the Streator (Ill.) Clay Manufacturing Co.



SELF LOADING
ELECTRIC INDUSTRIAL TRUCKS

"When the Settin' gang comes"
Kilns are emptied and cleaned

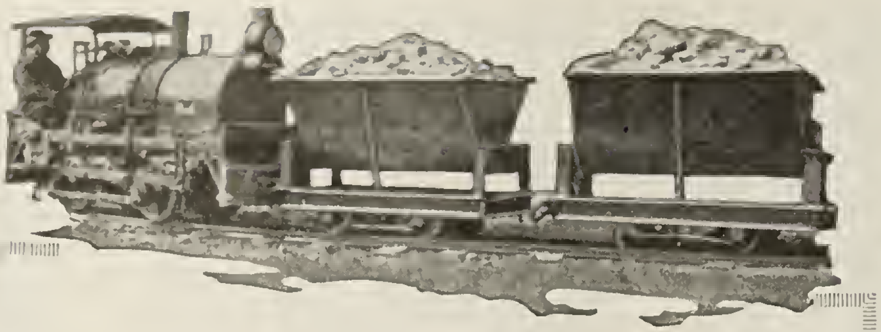
No delay in setting, means no excess hustle to keep up, no poorly set ware, no frantic efforts to keep the machines supplied with empties.
The Elwell-Parker Truck carries six times as much ware and moves twice as fast as a man. Get the particulars of its work on clay plants.

The Elwell-Parker Electric Co.
Principal Offices
Boston New York Pittsburgh Chicago
Cleveland San Francisco Portland
Works, Cleveland, O.

DUPLEX RESERVE POWER ASSURES DEPENDABILITY IN EXTREME EMERGENCIES

The tremendous reserve power of the Duplex—the original 4-Wheel Drive 3½-ton Truck—is applied four times more effectively than is possible with any other type of motor truck.
One source of Duplex dependability, under most adverse road conditions, is found in the range of gear reduction made possible with the Duplex Chain Case, which gives the Duplex a drawbar pull four times greater than that of any rear-wheel drive truck.
The Duplex, shown above, hauled the large oil tank, weighing 8½ tons, a distance of 30 miles, through sand and mud, and up steep hills. The Duplex clearly demonstrated that it is equal to any hauling emergency.
Let us send you our 1917 catalog and give you haulage facts and figures for your particular business. Address all communications to Dept. 128.

DUPLEX TRUCK COMPANY LANSING, MICHIGAN



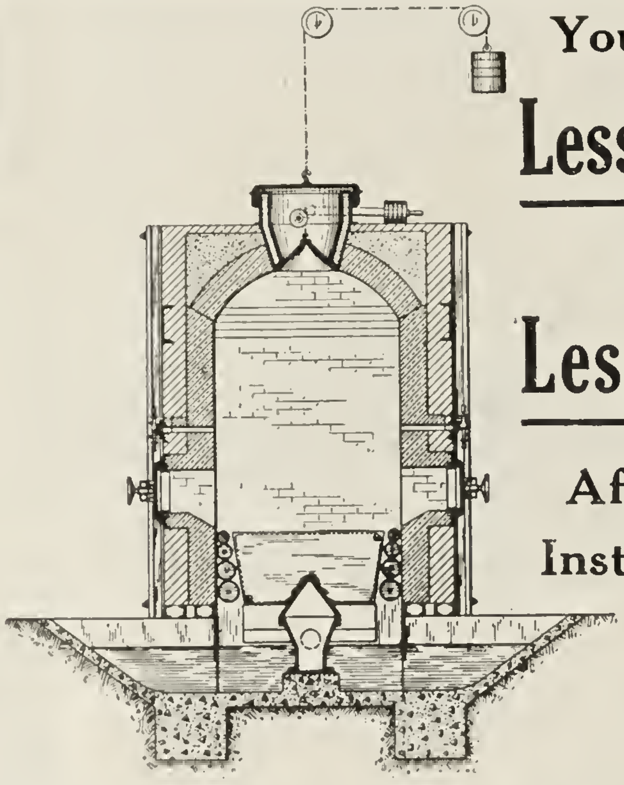
The
Bell Steam Locomotive
—why it is better

Its first cost is lower than other industrial locomotives; then, in addition, with a lower operating cost it hauls clay—hauls it farther, faster, longer hours, and more of it than any other locomotive built.

It gives a minimum of trouble and the repair cost is low. No licensed engineer is necessary, and it burns kerosene oil at NINE cents per gallon.

Attractive, isn't it? Get the details from the

Bell Locomotive Works, Inc.
30 Church Street NEW YORK CITY



You Need
Less Labor
and
Less Coal
After the
Installation
of
the
Richardson Gas Producer
(Patent Applied For)
The Ceramic Supply & Constr. Co.
Columbus, Ohio
Kilns Clay Machinery Draft Gauges

I. M. Earle, vice-president and general counsel of the Bankers Life Co., Des Moines, Iowa, has been made a director in the Ancho Brick Co., of El Paso, Texas, which operates a big plant at Ancho, N. Mex. Mr. Earle is said to have secured a large block of stock in the company, which is capitalized at $450,000, when the Ancho company was reorganized and consolidated with the company in which he was interested. Fire clay products are being manufactured and improvements are now under way at the plant, which will cost about $95,000 when completed. The Phelps-Dodge Corporation has secured a controlling interest in the Ancho Brick Co. and is backing it.

W. B. Owen, who for the past fifteen years has been general superintendent of the three huge plants of the National Fire Proofing Co., located at Hobart, Ind, Twin Bluffs and Ottawa, Ill., each of which has a daily capacity in excess of 500 tons, has resigned from his connection with that company. Previous to his association with the National Fire Proofing Co., Mr. Owen had charge of the plant at Hobart, which was at that time owned by his father. Mr. Owen's plans for the future have not as yet been fully developed. R. A. Shipley, a ceramic engineer who has been in the employ of the National Fire Proofing Co. at several of its plants and who, for the past few months, has been stationed at Ottawa, succeeds Mr. Owen in the position of general superintendent.

California

It is rumored that the Refractory Magnesite Co., of Pine Mountain, Cal., is planning to establish a brick factory in Cloverdale, a short distance from Pine Mountain. This company also operates a factory at Stockton, Cal.

Work is now well under way on the large calcining plant of the Piedra Magnesite Co., at Piedra, Cal. Several carloads of machinery have been received, and the remainder of the material and equipment will be on hand when needed.

The use of paving brick in San Francisco is being gradually extended. The Board of Public Works is now calling for bids for the paving of Arkansas Street, and the specifications call for a fourteen-foot central strip of vitrified paving brick.

The greater part of the equipment for the Theodore Dittell Co.'s clay mining plant being constructed at Antioch, Cal., is now in place and it is expected that the shipment of clay to manufacturers will be started in the very near future.

Plans for two dormitories and a general dining room to be erected at the George Junior Republic, near Chino, Cal., have just been completed. The proposed buildings will not be large, but an interesting feature of their construction lies in the fact that they will be built of brick manufactured at the school and by pupils.

The Funsten Clay Products Co., of San Francisco, Cal., reports an increased inquiry for hollow tile and several very important contracts under negotiation. In the last five or six years the utilization of hollow tile for building purposes on the Pacific Coast has increased some two hundred per cent., according to the Funsten company.

Contracts were let recently for the first unit in the proposed series of additions to be made to the plant of the California-Hawaiian Sugar Co., at Crockett, Cal. In this unit about 3,000,000 brick will be used, all of which will be supplied by the McNear Brick Agency, of San Francisco. Deliveries of the brick will begin at once as the actual construction is to start on August 15 and the work is to be completed by October 1.

Articles of incorporation, filed by the H. C. Muddox Co., of Sacramento, Cal., on July 5, state that the object of the concern is to manufacture and sell sewer pipe, terra cotta and clay products, as well as to mine clay, ganister rock, and sand. The company, which already has a clay products manufacturing plant in operation in Sacramento, has as its directors H. C., J. E., R. F., R. N., and G. L. Muddox. The capital stock of the new corporation has been placed at $250,000, with shares of $100 each.

A determined effort is to be made by the fire, health, and building departments of San Francisco to remove the old wooden fire-traps which are located in certain parts of the city within the fire limits. The burning of an old shack known as the Cosmopolitan Hotel, with considerable loss of life and danger to a large amount of property, has brought to a head a matter which has been up for discussion periodically ever since the great fire and earthquake of eleven years ago. Some of these old wooden buildings occupy prominent and valuable locations and, should the present buildings be removed, they are certain to be replaced with fireproof structures.

Colorado

Machinery has recently been installed at the plant of the Delta (Colo.) Brick & Tile Co. for the manufacture of burned clay silo tile. A mixture of Delta clay and clay brought in from a point about ten miles distant is being used in manufacturing this ware.

Indiana

The new drain tile plant at Tocsin, Ind., owned by Amos L. Bird, is now in operation.

An order for the sale of the property of the Indiana Brick Company, at Anderson, Ind., for the benefit of its creditors has been made in the superior court at Anderson. Following the death of the late Frank Makepeace, who was the principal stockholder in the company, and manager of the business, a receiver was asked by John Kem, a minor stockholder, and J. J. Netterville was named by Judge Ellis to take charge of the company's affairs. Mr. Netterville, as receiver, has asked for an order of sale and will dispose of the property at auction to the highest bidder. The property of the Indiana Brick Company consists of 270 acres of land near Mounds Park, on which the brick plant is situated. The sale order includes the land, plant, brickmaking machinery, the finished product that is on hand and the brick being made. Altho the property which is to be sold has not yet been appraised, its estimated value is $70,000. The debts of the company, it is believed, will reach $75,000. Aside from three claims secured by mortgages, the remainder of the debts are evidenced in promissory notes. There are some current obligations outstanding, but indebtedness of this character is not in any considerable sum. An appraisement of the property will be made and then Mr. Netterville will fix the date for the sale.

Iowa

The Smith Brick & Tile Co., of Mason City, Iowa, has been incorporated with a capital of $500,000 by C. L. Smith, of Mason City, C. J. DeVally and George Coppinger, of Sheffield, Iowa, and W. B. Harding of Sioux City, Iowa.

Almost five-hundred people gathered at the plant of the Boone (Iowa) Brick-Tile & Paving Co., on Friday, July 13, to witness a flag-raising celebration. The large bunting flag was purchased by the employes of the plant, while the pole used was the gift of the company. The program, which consisted of patriotic and inspirational

The Analogy Between Fire and Water, Scum and Rollin's Barium Carbonate

IS PERFECT

Rollin's Barium Carbonate eliminates and smothers the scum just as effectively as fire is smothered by water.

Add "Rollin's" at the pug mill feeder; it renders insoluble and harmless the scum-producing sulphates that are in your clay.

If you are bothered with scum on your ware, either in the drying or burning process, or after it is layed up in the wall—you particularly should use

Rollin's Barium Carbonate

Rollin Chemical Company
Inc.
Charleston, West Virginia

General Sales Agents
National Aniline & Chemical Company
244 Madison Ave., New York City

RINO LUBRICANT

protects the metal gears and rope and reduces noise.

It is a heavy black adhesive compound, which will stay where it is put, and lasts longer than grease or oil.

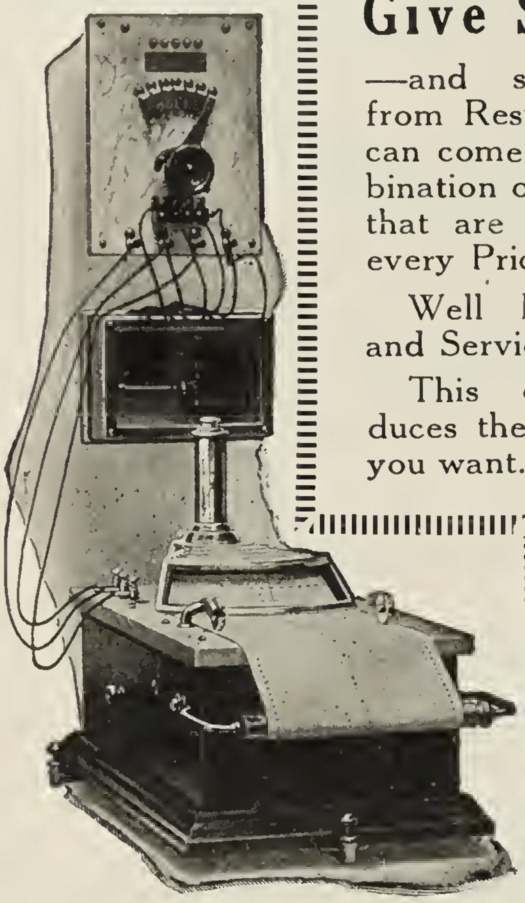
It surrounds the gear teeth with a tough, elastic covering, insuring perfect lubrication; prevents wear by preventing actual contact of the metal, and almost eliminates noise.

The persistent fault of the ordinary grease is that it falls off, gets hot and drips off.

RINO LUBRICANTS do not do this. They save you in gear wear and excessive use of greases.

Just say the word and we will send you a Sample to try out. No obligation—ask for it today.

THE OHIO FILLER & SHIELD CO.
COLUMBUS, OHIO



PRICE PYROMETERS

Give Satisfaction

—and satisfaction comes from Results, which in turn can come only from a combination of the two elements that are always a part of every Price sale.

Well Made Instruments and Service.

This combination produces the exact results that you want. The Service continues always as interested service. Get in touch with

The Price Electric Co.
12367 Euclid Avenue
Cleveland, Ohio

You won't have to worry about competition if you treat your clay with

R. H. Precipitated Carbonate of Barytes

You can safely guarantee that your brick will be

Scum-Proof

You can get a higher price and influence architects to specify your product because Efflorescence is prevented absolutely.

But insist on the R. H. BRAND—it's dependable.

We have a complete line of high grade chemicals for the clay industry.

The Roessler & Hasslacher Chemical Company
100 William Street New York
Chicago, Ill. Cleveland O. St Louis, Mo.
Kansas City, Mo. San Francisco, Cal. Philadelphia, Pa.
Boston, Mass. New Orleans, La
Cincinnati, O.

addresses made by Mayor G. D. Baker, of Boone, Judge J. L. Stevens, and Attorney J. W. Jordan, was opened and closed by music played by a local band. W. H. Brecht, secretary of the company presided over the program.

Kentucky

The City Commission of Lexington, Ky., is contemplating the erection of a new municipal building which will house the city departments of every kind and at the same time include an auditorium. Details of the construction have not been decided on.

Sewer pipe is going to be in continued active demand in Louisville for many months as a result of the action of the city, state, and federal officials. Health conditions are to be looked after with special thoroness as a result of location of the army camp outside of the city, and the rule has been promulgated that every building in Louisville occupied as a human habitation or place of work shall be connected to a sewer. There are thousands of buildings in the city not so connected and which should have connections of this type, it is declared, and an inspection now under way will result in orders that such connections be made immediately.

Minnesota

The substantial brick walls of a garage on the plant of the Beutler Brick & Tile Works, of St. Cloud, Minn., and an active and efficient fire department probably saved the remainder of that company's plant from destruction, when a fire gutted the interior of the garage and caused a loss of approximately $700. The structure was two stories in height and provided facilities for the accomodation of two machines; it also included a work shop. In writing about the fire, William Beutler, one of the sons who are associated with their father, Ernest Beutler, in the Beutler company, states: "The solid brick walls withstood the heat of the flames and by the protection they afforded, probably saved many of the other structures on the plant." Business with the Beutler Brick & Tile Works, is according to Mr. Beutler, proceeding fairly well, altho somewhat lighter than usual at this time of the year. In the place of open air drying sheds, a radiation steam heated drying floor for tile has been substituted.

Missouri

According to information received by *Brick and Clay Record's* correspondent at Kansas City, Mo., the new plant of the Kaw Brick Co., at Iola, Kas., which company was recently incorporated, has begun operations.

The officers of the Kansas City (Mo.) Brick Co. have been inspecting the plant being erected at Vale, Mo., and are rushing the work as fast as possible. It is estimated that the plant will be under operation within the next fifteen days.

The price of vitrified sewer pipe remains steady on the Kansas City (Mo.) market. The demand for this product so far this summer has been far better than that of the same period a year ago. Hollow building tile has been increasing steadily in price as has also common brick, but face brick remains steady. There has been practically no change in the price of face brick since the first of March at this point.

George H. Tefft, sales manager and secretary of the Walter S. Dickey Clay Manufacturing Co., declares that the business has shown a nice increase over that of the past year. "Our plant here has been running very close all season," Mr. Tefft said. "The prices as a rule are steady and the market somewhat brisk. We have been experiencing less difficulty from the car shortage than we have for some time which has helped greatly to make the business at least more efficient."

Conditions at Kansas City, Mo., during the past two weeks showed great improvement over those previously prevailing. There has been a steady increase in demand for brick and clay products and the plants in and around this city have been working almost to capacity. Manufacturers and shippers declare that the railroad service has improved more than one hundred per cent. in the past month or so. The relief from the car shortage problem has enabled the companies to speed up their business to some extent.

H. H. Crowell, sales manager of the Kansas City (Mo.) branch of the Hydraulic-Press Brick Co., reports that business during the past month has been exceptionally good. The company has been taxing the output of its plant at Diamond Station, just outside of Kansas City, almost to capacity in producing 175,000 face brick for the new Maxwell assembling plant at Kansas City and 150,000 face brick for a million-dollar apartment building being erected at Armour Boulevard and Gilham Road. Specially designed brick were furnished for the mantles.

New Jersey

Following the installation of new machinery at the Port Murray, (N. J.) plant of the National Fireproofing Co., operations have been resumed. The plant was closed down some time ago while two new boilers were installed and new kilns erected. With the reopening of the plant eighty-three additional men have been hired, most of whom are engaged on work in connection with improvements which will increase the output of the factory. The plant has a capacity of 50,000 brick a day, and orders on hand total more than 6,000,000, the company states.

Ohio

H. H. Marting has incorporated the Ironton (Ohio) Fire Brick Co., with a capital of $20,000. Associated with Mr. Marting are E. L. Marting, A. C. Steece, C. C. Hayward and F. E. Hayward.

The demand for common brick in central Ohio territory is the best feature of the trade at this time. Prices for soft-mud brick range between $10 and $10.50 in Columbus, while shale brick are quoted from $11 to $11.50. Higher prices are expected in the near future, however.

A petition for charter was filed in the office of the clerk of the superior court at Columbus, Ohio, by A. H. Shepherd, A. W. Shepherd, M. E. Shepherd, and L. B. Shepherd, asking to be incorporated as the Shepherd Brothers Brick Co., for the purpose of manufacturing and selling brick and terra cotta. The capital stock is to be $50,000 with the privilege of increasing the same to $300,000.

The Star Fire Clay Co., which was recently formed, has been incorporated at Columbus, Ohio, with a capital stock of $25,000. John H. Smith, of Wellsville, is president of the company, which is composed of business men of Wellsville, New Cumberland, W. Va., and East Liverpool. The company recently purchased 305 acres of land near Wellsville formerly known as the Hammond farm, which is underlaid with clay, and it intends to mine the material. A clay grinding plant is now in process of erection in Wellsville and

No Imitation
is ever as good as the original. When you want genuine "Jenkins" Valves, remember that they always bear Diamond Trade Mark as shown in the cut. This Trade Mark is your protection, and our guarantee.

Jenkins Bros. Valves
STANDARD PATTERN
with Jenkins Renewable Composition Discs are made in globe, angle, cross, check, radiator and other patterns. When required for steam use, specify Jenkins Bros. with No. 119 Disc; for cold water service, Jenkins Bros. with No. 93 Disc. The discs being softer than the metal, tightness is assured, even when the seating surface has slight imperfections. Finally, when worn, the discs can be replaced at slight expense, which restores the initial tightness of the valve. Furnished in brass or iron. Your dealer can supply.

REG. U.S. PAT. OFF. TRADE JENKINS MARK Jenkins Bros
Jenkins Bros.
80 White Street, New York. 524 Atlantic Avenue, Boston.
133 N. 7th Street, Philadelphia. 300 W Lake Street, Chicago.
Jenkins Bros. Limited, Montreal, Canada, and London, E. C. England.
REG. U.S. PAT. OFF. TRADE JENKINS MARK Jenkins Bros

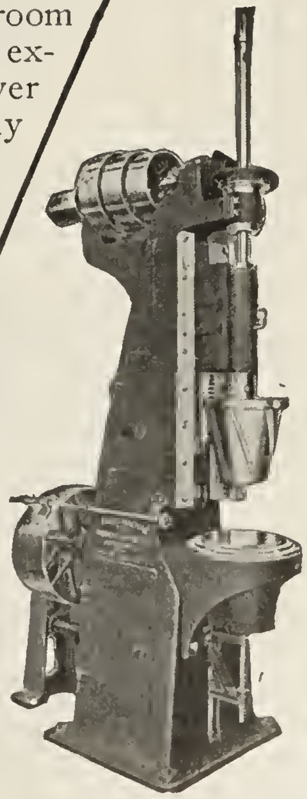
A bi-product that is profitable

Place the machine off in one corner of your plant, and let it absorb the spare time of your machine room men. They soon become expert, and a stock of flower pots quickly collects, ready for the kiln.

It is almost pure velvet—a bi-product—a sure seller with a manufacturing cost low enough to insure a goodly profit.

Send us sample of your clay and let us show you what our flower pot machine will do.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.



You would say that it was the silliest thing you ever saw

Slant Grate Bars Under The Boiler

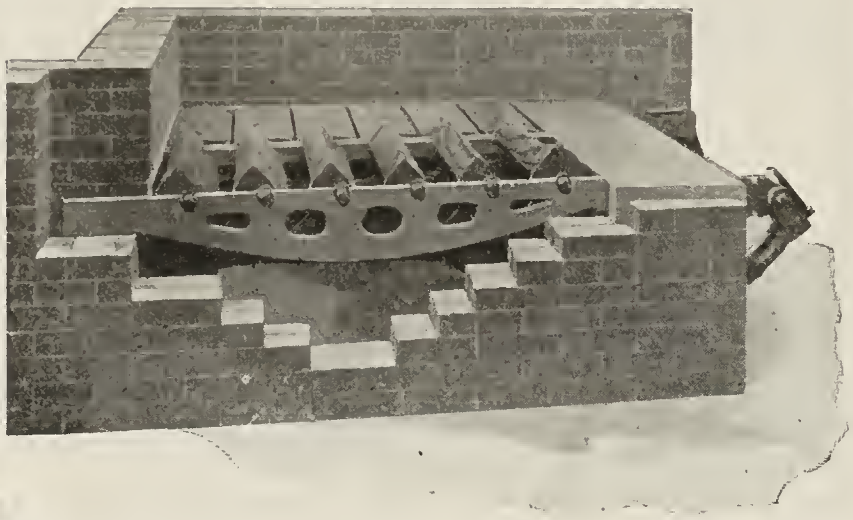
It simply isn't done, it's ridiculous, impossible. Why then do you use them in the kiln furnaces? For, here you burn more fuel, ten times as much, as you do under the boilers. You will be astounded at the savings made by installing

Cyclone Kiln Grates

They burn every bit of the fuel, they are easy to clinker and clean, they burn cheap fuel, are successfully handled by cheap labor, and are perfectly controlled. Can you ask for more?

Get the details of successful use from

The Cyclone Grate-Bar Company
BUFFALO, N. Y.



Gold Medal Award

Panama-Pacific Exposition
for

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Their Merits are Vouched for by
Hundreds of Satisfied Users
Ask for our New General Catalog No.8

THWING INSTRUMENT CO.
3336 Lancaster Ave. - Philadelphia, Pa.

modern machinery is being installed. The company expects to begin active operations at once.

Lettings for brick paving are still going on in Ohio despite the high price of materials and labor. Of course, quite a few of the jobs are not awarded because figures run ahead of estimations. In some instances the work will be readvertised and higher estimates made by the engineers in charge of the projects. Bids for brick paving were opened last week at Dayton, Sidney, and Toledo. Many of the state highway jobs, which were opened June 27, have been awarded following a delay caused by the requirement that county auditors certify that the money for the work is in process of collection.

The car supply in Ohio territory has been greatly improved, and very little complaint is being made by factories because of a shortage. In fact, shipping facilities are now up to requirements, and it is the lack of orders that is making the brick business rather quiet. Considerable shipping is being done on old contracts, and buildings which were started several months ago are being pushed to completion. But new building projects are not very numerous, and consequently there is a rather quiet demand for brick for building purposes. The labor shortage at the various Ohio clay products plants is now quite acute and has threatened the activity of some plants.

It has been decided by the Ohio Board of Administration that convict labor exclusively will be used for the erection of approximately $1,285,000 worth of new buildings at various state institutions. Plans to have private contractors do some of the work have been abandoned because of an advance of approximately twenty-five per cent. on construction costs. A new penitentiary building at London, Ohio, will be one of the first of the buildings constructed. Brick from the state brick plant at Junction City will be used in this work. It was suggested that some of the common brick might be made at London, and that proposition is now being considered by the Board of Administration.

Oregon

Preparatory work at the plant of the Molalla (Ore.) Fire Clay Co., one of Oregon's newest industries, has been practically finished and active operations are expected to commence in the very near future. A tunnel into the hill where the clay is located has been finished and the deposit tapped. The tunnel is ninety-eight feet long and extends to seventy feet below the surface. Until the company is prepared to undertake manufacturing locally on a large scale, the clay mined from this deposit will be shipped to the East.

Pennsylvania

The Kutztown (Pa.) Brick Co. recently received an order for 200,000 brick from the New Jersey Zinc Works. The brick are now being loaded for shipment.

The board of directors of the Harbison-Walker Refractories Co., of Pittsburgh, Pa., has ordered a dividend of 1½ per cent. on the preferred stock of the company, which is to be paid July 20, to stock of record of July 10. The business of this company is said to be the most active in years.

One of the largest building operations in Berks County, and one which is requiring millions of brick, is the reconstruction of the plant of the Fleetwood (Pa.) Metal Body Co., which several months ago was partly destroyed by fire. The estimated cost of the new additions, which will be of fireproof construction, will be $50,000.

Representatives of a large brick manufacturing concern spent several days in Allentown, Pa., to interest local capitalists in the establishment of a new plant in Hanover Township, Lehigh County, Pa. It is the intention of the syndicate to develop the Hottenstein farm, where a plant is to be established with a capacity of one hundred thousand brick a day. Among the Allentown capitalists who may take a hold are Max Chanock and Max Senderowitz.

The Thomson-Starrett Co. has secured the contract for the erection of 300 dwellings which are to be built by the Bethlehem Steel Co. A large number of these houses will be built just east of Bethlehem and many will be erected near South Bethlehem. On Bonus Hill, at Bethlehem, houses costing from $40,000 to $50,000, and accommodating several families are to be erected. They are to be paid for from the bonuses earned by the employes of the steel works. George K. Halteman, of Allentown, will furnish the brick and tile required in their construction.

The plant of the Beaver Valley Pot Co., of Rochester, Pa., given over to the manufacture of closed and open pots, was recently acquired by the Laclede-Christy Clay Products Co., of St. Louis, Mo. This plant in the future will be operated as the Laclede-Christy Co., of Pennsylvania, and the new owners expect to continue the manufacture of pots from the same high grade material, with a consistant effort to improve the product. Without doubt, L-C "Beaver Valley" pots will soon enjoy a reputation equal to that of the products made at company's St. Louis plant, which was established sixty-nine years ago.

The controlling interest in the Reading (Pa.) Fire Brick Works changed hands at a special stockholders' meeting held about two weeks ago. The resignations of William McHose Boyer as president, and Wilson V. McHose as treasurer were accepted, and the following men elected to succeed them: J. Herbert Parker, president; Joseph S. Pendleton, treasurer, and John W. Sterner, secretary and assistant treasurer. William McHose Boyer will remain with the company as manager and no changes in the operating staff are contemplated. The plant of the Reading Fire Brick Works was established in 1845 and has been in continuous operation ever since.

Virginia

The Glasgow (Va.) Clay Products Co., of New York N. Y., and Glasgow, has completed its plant and installed all of the necessary machinery at Glasgow, in Rockbridge County, on the Chesapeake and Ohio Railway, where the Lexington branch road connects with the main line of the James River division. This plant, under the management of K. T. Crawley, has now commenced the manufacture of brick and drain tile. Its present capacity of 50,000 brick a day will be increased in proportion to the increase in the demand for the company's products.

Washington

Two orders for terra cotta recently received by the Washington Brick, Lime and Sewer Pipe Co., of Spokane, Wash., aggregated $21,000. The largest of these was for $12,000 worth of the material to be used in the Grant County Court House at Ephrata, for which the company also sold ten carloads of face brick. In addition to these orders, the company closed contracts to supply terra cotta for all of the additions to the Spokane schools, with one exception, for which material has not already been contracted. This

Marion

Steam Shovels, Dredges, Draglines and Kindred Machinery

"LET'S dig our clay out of this 35-foot bank at *one* cut instead of making a two-bench job of it; and let's dig it fast enough so the plant will always have plenty of stuff to work on," said the Bach Brick Company of Chicago. So they bought a "Marion" Model 212, which slices up

Clear to the Top of a 35-Foot Bank, Filling a 2-Yard Car at Each Swing

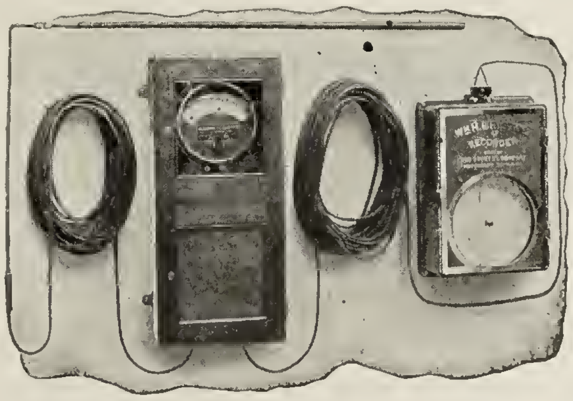
and keeping the big plant supplied "without half trying."

"Marion" is *really* "The Clayworker's Shovel"—it helps boost production and hold down costs in a practical way, and it's always ready for work—*lots* of it. Ask us for facts that will help *your* business—no obligation to you.

The Marion Steam Shovel Company, Marion, Ohio

Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle

222 ESTABLISHED 1884



TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.

RECORDING PYROMETERS

BRING THE KILN INTO THE OFFICE

—right to the Superintendent's desk, giving him more time to do brain work.

The recorders bring him records in permanent form of the temperatures at the kiln. He can compare today's temperatures with that of yesterday, a month ago, or a year ago.

Down at the kilns an equal number of Bristol Indicating Pyrometers act as a guide for the burners. Team work of this sort eliminates all guess work and the resulting inefficiencies.

Suppose you allow us to show you how you also can increase team work and efficiency by the use of Bristol's Recording Instruments.

Write for Bulletin 163.

THE BRISTOL COMPANY, Waterbury, Conn.

Branch Offices: Boston, New York, Pittsburgh, Chicago, San Francisco

FITTED

To Individual Requirements

Brick drying apparatus requires individual fitting—to the extent that your clay and steam conditions differ from those at other yards.

The Standard Drier

offers, among other advantages, that of flexibility of arrangement. This feature permits us, and our 30 years' experience qualifies us, to apply our drying equipment specifically to meet existing conditions.

Re-adjustment of present methods is unnecessary. We design and arrange the drying apparatus so that it dovetails with the other units of established practice.

Ask for full information and free estimate. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

The Pyrometer That Has Set A New Standard

In animate or in inanimate things, in man or in machine, the ability "to do it better" has always been sufficient cause for selection as the Standard.

THE BEIGHLEE PYROMETER

to those who know, has the ability and reputation for doing it better, and a new high standard has been set.

Let us tell you why, in our opinion, this pyrometer will save you money, then you use your own judgment.

Write the

BEIGHLEE ELECTRIC CO.

Cleveland, Ohio

Herman A. Holz
Hudson Terminal Bldg.,
New York.
Representative in
New England States.

company recently shipped an order of twenty-six carloads of sewer pipe to Huntington, Ore.

West Virginia

The Granite Clay Products Co. has been incorporated at North Mountain, W. Va., with a capital stock of $175,000, to operate in the Hedgesville district, Berkley County. The incorporators of the new concern are J. M. McCleve, of North Mountain, C. M. Seibert, Dennis S. Kilmer, P. R. Harrison and H. O. Evans, of Martinsburg.

* * *

BRICK SUFFERS DROP *in* GOTHAM

(*Continued from Page 214.*)

brick market of New York, probably the greatest market in the world, there is an air of seriousness, of course, and about everybody concerned is sitting tight and ready for the next move. The government wants five billions of dollars more for war purposes, and New Yorkers are expecting another drive for the second Liberty Loan in September, but nobody is losing any sleep over it. Day by day the war is becoming more serious and fresh tales of ships being chased by submarines are plentiful.

HEAT AND DRAFT STOP SPECULATION

There was plenty of interest in the East over the draft, but the intense July heat bothered folks just about as much. Everybody knew that we would have to stand for both the heat and the draft in July, but it is not a day dream to say that the heat had about as much effect on the real estate market as the general condition brought on by the draft. When it is hot in old New York it is very hot. It is fine weather for mint juleps and lemonade, but conditions are not just right for speculating in real estate, and when the speculators in real estate take things easy there never is much doing in the building line. Somehow the speculator has to be busy in order to get the other fellows interested.

Out of an extraordinary situation there is one dominant fact standing head and shoulders above a lot of other things, and that is that since Uncle Sam has practically conscripted the steel production of the country, leaving precious little for structural operations, there is a good prospect for the building of structures which, by elimination of steel as far as is possible, will require the use of more brick and other clay products, and just to show that it is alive to the possibility, brick keeps down in price so as to be on the ground floor when the rush commences. Brick three weeks ago sold for from one dollar to two dollars more than they bring today. They are quoted as low as $8.

Excepting steel and lumber, there is a regular bear movement under way in the entire building material market that offers builders a fine opportunity for proceeding with masonry and reinforced concrete semi-fireproof buildings, according to the Dow Service Daily Building Reports. This authority goes on to state that present low values should not be construed as permanent.

DROP IN BRICK INSTILLS HOPE

Of chief interest in the building materials market has been the action of the brickmakers. The action of the brick manufacturer has certainly added to the optimism of the New York city builders and operators. Brick sales have not increased in an extraordinary manner, but business is good and everything points to it being better. Architects and contractors are busier than they have been for some time despite the fact that it is vacation season.

Taken as a whole, the present building material market, excepting brick, looks as tho it would remain unchanged for a brief spell at least, with not much chance of a reduction in anything in the near future. Second-hand commons came down along with new commons. They have been selling as high as $13 a load of 1,500. Cheaper brick may give an impetus to the market, but how long brick may be cheaper in proportion than any other commodity in the building material list is not known. It is this uncertainty that may make for an increased business and right soon. Even if a man isn't ready to build, it is a pretty good plan for him to put away a supply at present prices. "Brick will keep, and they won't eat anything" is the reason given by one prospective builder for buying now.

Sooner or later it is felt that brick must advance again, as labor is scarce and apt to become still more so because of the draft, both in the brick yards and in the clay mines. Then the matter of railroad congestion, coal shortage, high cost of machinery, etc., all enter into brickmaking just as they do in other industries, and nobody can blame the clay miner or the brick manufacturer for wanting at least a fair profit, even if not as much of a margin as is possible in peace times. The present price is altogether too close to the actual cost of production for comfort.

A surplus of brick has been piling up in the New York market, and it was felt that a reduction in the price at this time would clear some of the supply and make room for new stock. The new product will be coming in at a lively rate before long, and manufacturers and dealers believe in keeping things moving. Buying brick at $8 instead of $10 or $11.50 is a mighty good way of saving money, and builders contemplating construction work haven't any notion of letting the opportunity slip by without at least grabbing at it. Thirteen cargoes of Hudson commons came down the river the week of July 21 and twenty cargoes were sold.

In the face brick market there is no indication of a slump and the situation is satisfactory. There is not much likelihood of any reductions. Terra cotta and hollow tile is also holding strong, with the outlook fairly bright.

News from New Haven, Conn., of a three-million-dollar building operation for Yale College acted as a stimulant, especially to the manufacturers of burned clay. It also brings to mind that there is considerable building of this nature either started or about to be started. This is an indication that funds are not scarce. Residential construction is also picking up and industrial construction is going ahead.

BUILDING FIGURES FOR NEW YORK

Figures for building in the four largest boroughs of New York for the two weeks ending July 21 do not offer much encouragement to the followers of the real estate and building field. Manhattan only reports new buildings projected to the value of $784,000 and alterations to cost $407,980. The Bronx reports new buildings at $179,500 and alterations at $65,150. Brooklyn leads the city with filings of $1,439,765 for new structures and only re-

Look This Car Over Carefully

Note the way it is braced, and the manner in which it is put together. Stout and rugged, capable of resisting dipper hammering, big chunks dropped into it, derailments, etc. In addition it is Bottom Dump, it does not hammer itself to pieces when dumping.

The Youngstown Steel Car Company
Youngstown, Ohio

Your Fortune For Coal Or Use Canton Shaking Kiln Grates Which?

One of the very prominent refractory men says: "It is simply beyond my comprehension why otherwise good plants still use old methods. We are saving over 25% of our fuel with Cantons, amounting to thousands of dollars each season.

Get our bulletins.

The Canton Grate Co.
1706 Woodland Ave., Canton, Ohio
Southern Representative:
Mc BURNEY & JONES
Efficiency Engineers
829 Trust Co. of Ga. Bldg.
Atlanta, Ga.

"SCANDINAVIA"

(Solid Woven Cotton Belt)

is the kind of belt that gets the preference from those clay-products manufacturers who are most particular about knowing the exact cost of operation in every detail.

"Scandinavia" always shows up so well when the manager looks over the cost figures that there never is any question as to the belt that will always have the preference.

"Sandinavia" is the belt for you to use for power transmission—elevating and conveying.

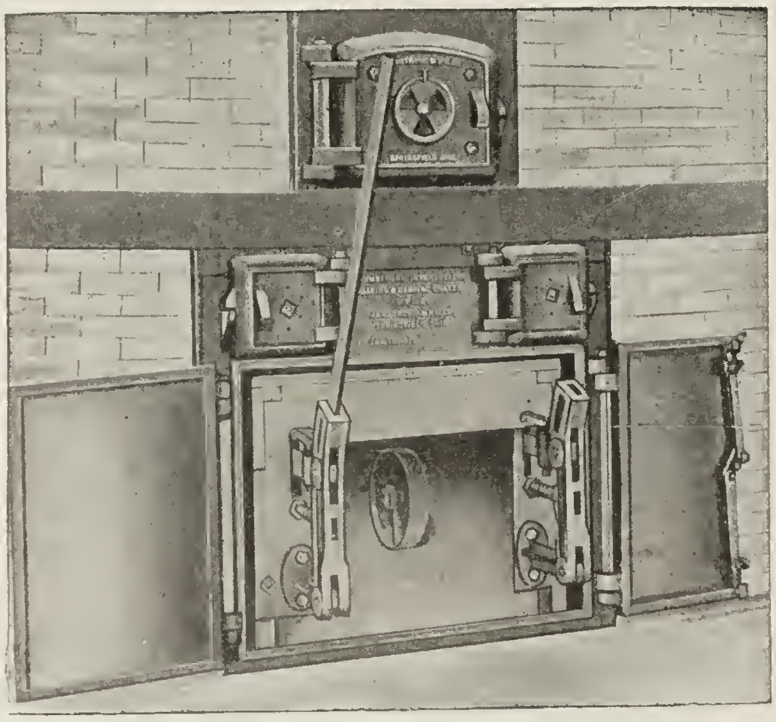
Try it once and you'll be convinced

Scandinavia Belting Co.

106-108 Reade Street, New York

Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.

Canada: Federal Engineering Co., Limited, Toronto and Montreal.



Just one movement of the dumping device of the

Standard Interlocking Kiln Grate

entirely cleans the fire—clinkers as thick as six inches are easily handled.

This is only one of many points of superiority that make this the ideal kiln grate for every brick plant.

We install it at our expense—you give it a thoro trial—if it doesn't do all we claim we'll remove it without any cost to you.

Write for details and prices.

The Armstrong Manufacturing Co.

SPRINGFIELD, OHIO

ports $282,375 for alterations. Queens reports $506,655 for new structures and $401,068 for alterations.

Compared with the corresponding period of 1916, the records show that new buildings this year have an estimated value of $2,899,920 and alterations $1,156,573, as compared with $8,634,579 for new buildings last year and $1,291,714 for alteration jobs. The grand total for new work to date in New York is only $53,349,396, as compared with $106,930,750 for the first part of 1916 to a corresponding date of July. Alterations last year totaled $16,919,796, as against $12,548,798 this year.

Newark, N. J., is holding its own as compared with 1916. For the week ending July 13 permits were filed for an estimated outlay of $74,459, as compared with $72,491 for the corresponding week of 1916. The week of July 20 estimated costs of new buildings total $237,043, as compared with $225,630 for the corresponding week of 1916.

⁂

EASTERN REDS RALLY *with* BIGGER INTEREST

(*Continued from Page* 219.)

The first thought in the mind of the young draughtsman, the budding architect, is the use of brick. Why? Because it is as enduring as the rocks, and has all the esthetic and artistic qualities produced by nature.

Brick is made everywhere, sold everywhere, used everywhere, and for every type of constructive effort it is exceedingly desirable.

I am here to tell you after many years of selling experience, that to the architect who designs the building and prepares the drawings, to the contractor who executes the plans and lays thebrick and to the owner who ultimately pays the bill, it does not make the difference of "one tinker's damn" whether the price of brick is $15 per thousand, or $25 per thousand delivered at the job, in the tonnage used, provided Mr. Brickmaker uses intelligent effort and foresight in presenting his case; yet, at present few of us, if any, are making money, and our demand is decreasing steadily.

NEED FOR DEVELOPMENT IN MARKETING METHODS

If all this is true, what is then the matter with the brickmaker? He has used his fertile brain and inventive genius to make brick mechanically good, artistically beautiful, economically cheap, but in the marketing of his ware, in enlarging his opportunity, he is but a child.

What is the remedy? Let every brickmaker include in his legitimate cost of production anywhere from twenty-five to fifty cents per thousand based on last year's shipments and deposit this sum with a central headquarters, who will hire a man of training, experience and initiative, to spread before the public the extraordinary merits of our product, clearly, concisely, and in an interesting manner, and this for a period of at least three years, thereby traveling in the procession with producers of other and competitive materials.

What will be the benefit? In place of wondering how we can limit our production and still pay interest charges, we will be planning how we can increase our production, so as not to keep the job waiting. We will receive a just reward for our work and investment, and be able to meet our stockholders at least once a year with a happy smile and a satisfying dividend.

What is the necessity? Simply "Co-operation," which is a short definition for faith in each other, charitableness to all brother brickmakers, and the ability to stick together thru fair weather and foul, thru hell, fire and brimstone.

Gentlemen, the average brickmaker is a very human man. He loves his family as well as his business, wants to pay his bills, and has loads of friendliness for his fellow craftsman. He is entitled to good pay for his work, and a fair return on his investment. Therefore, let us band ourselves tightly together, in every legal manner, for our common good.

I want to give you a slogan, to practice, to preach, to dream over: *"The brick business for us all, all of us for the brick business."*

TRIP TO NIAGARA FALLS FOLLOWS MEETING

At the conclusion of the meeting, Mr. Black, aided by his Lieutenants, Messrs. Degenhart and Langworthy, were hosts on an automobile trip to Niagara Falls, and a dinner at the International Hotel. The occasion was one which will be long remembered by all who were present, among whom were the following: F. T. Owens, D. H. Miller, E. C. Clark, H. L. Langworthy, C. C. Murray, Joseph Degenhart, H. O. Crosby, Rosser Thomas, R. D. T. Hollowell, John H. Black, A. C. Tevling, J. C. Fowler, Chas. C. Stratton, David Steumpfle, Elisha K. Blair, William Hanley, Jr., and William McKinnon.

TENTATIVE SPECIFICATIONS *for* BURNED CLAY SEWER PIPE

(*Continued from Page* 229.)

spector employed by the purchaser or consumer. The purposes of the inspection shall be to cull and reject pipes which, independent of the physical tests herein specified, fail to comply with the requirements of these specifications.

37. Sewer pipes shall be subject to rejection on account of the following:

(*a*) Variations in any dimension exceeding the permissible variation given in Table IV.

(*b*) Fracture or cracks passing through the shell or hub, except that a single crack at either end of a pipe not exceeding 2 in. in length or a single fracture in the hub not exceeding 3 in. in width nor 2 in. in length will not be deemed cause for rejections unless these defects exist in more than 5 per cent. of the entire shipment or delivery.

(*c*) Blisters where the glazing is broken or which exceed 3 in. in any diameter, or which project more than ⅛ in. above the surface.

(*d*) Laminations which indicate large voids in the pipe material.

(*e*) Fire cracks or hair cracks sufficient to adversely affect the strength, durability or serviceability of the pipe.

(*f*) Variation in alignment in pipes intended to be straight of more than ⅛ in. per linear foot.

(*g*) Glaze which does not fully cover and protect all parts of the shell and ends except those exempted in Section 32; also glaze which is not equal to best salt glaze.

(*h*) Failure to give a clear ringing sound when placed on end and dry-tapped with a light hammer.

(*i*) Insecure attachment of branches on spurs.

38. All rejected sewer pipes shall be plainly marked by the inspector and shall be replaced by the manufacturer or seller with pipes which meet the requirements of these specifications without additional cost to the purchaser or consumer.

You want

BURNING CONTROL

To get it—

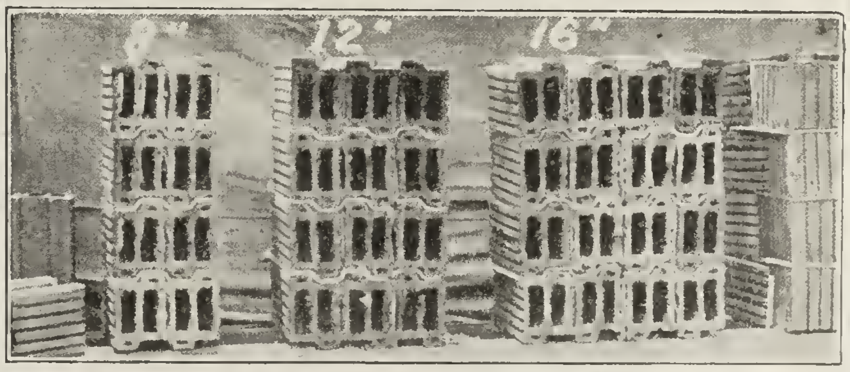
You Need More Than Your Experience and Good Judgment

Why don't you try the Veritas System? It opens up entirely new methods of temperature control, it teaches you new points in burning that are not ordinarily evident, it indicates exactly, at any time, just what work the heat is accomplishing, it is always accurate and greatly increases the interest of the burners.

Such firms as the Cleveland Hydraulic Press Brick Co. and The Dover Fire Brick Co. are using it, and new high grade plants are added each week. We guarantee results or we won't install.

The Veritas Firing System Co.
Trenton, N. J.
and Herbert Forester, Box 37, Cleveland, O.

The "LOXALL"



A better hollow block

To make sales readily, to keep your factory always working on orders, to have satisfied customers and masons that boost your block, you must have a better hollow block—that means "Loxall." It is easy to make and easy to sell. Get the particulars on yard rights from

J. E. EXNER
602 Lincoln Street COFFEYVILLE, KAN.
"LOXALL" is patented in the U. S. A. and Canada

This Cement Required for Good Furnace and Kiln Construction

It is not a fire clay. It is a Fire Cement that will soften at 2318° Fahrenheit and will stick to firebrick—surface or joint—up to temperatures of 2700° without running. Professor Geo. H. Brown, Dept. of Ceramics, Rutgers College, says:

New England Fire Cement has a low firing and drying shrinkage. It will not tend to crack or flake off when applied to the surface of brick work. "Its mechanical and working properties are very satisfactory."

Line a kiln or two with this cement—try it.

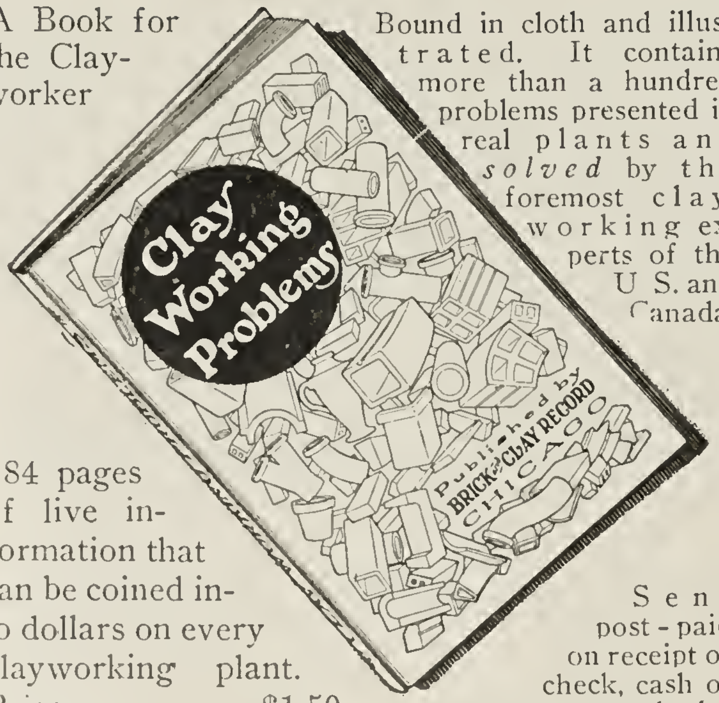
Write your own guarantee, then order.

New England Fire Cement Company, Inc.
240 Lisbon St., LEWISTON, MAINE

101 Questions Answered

A Book for the Clay-worker

Bound in cloth and illustrated. It contains more than a hundred problems presented in real plants and *solved* by the foremost clay-working experts of the U. S. and Canada.


Clay Working Problems
Published by Brick and Clay Record Chicago

184 pages of live information that can be coined into dollars on every clayworking plant. Price $1.50

Sent post-paid on receipt of check, cash or money-order by

Brick and Clay Record
445 Plymouth Court CHICAGO

POTTERY NOTES

A Resume of the Activities of
the Potters and Some Mention
of Their Plans for the Future

BIRD'S-EYE VIEW OF POTTERY SITUATION

It is the general opinion of those who have kept in close touch with the domestic pottery situation during the last eight months that the production has been averaging from sixty to seventy-five per cent. of normal. It is because of this fact that so many unfilled orders are on the books, and the manufacturers have been unable to make shipments. Numerous factors have been presented to create such a condition. Last winter there was an acute shortage of gas, plants being idle day after day.

Then followed the inability of pottery manufacturers to secure sufficient and regular volume of raw materials. A dozen or more strikes were listed. Advanced wages were sought in many instances, while in other cases changes were asked for in working conditions. Then came the spring season, and the "full crew" was an unknown quantity. Manufacturers have been unable to keep enough help to operate different departments to capacity. Then followed the call to the colors, which caused many workers to leave the shops. On top of this will come the draft, which will take young men from the trade. It is common talk today that in the potteries in the West there are two positions for every seeker of employment.

Transportation facilities have been such that embargoes have been of daily occurrence. This prohibited the receipt of raw materials, and the shipment of finished products. When all these factors are put together, one can readily see why the production of domestic pottery this year has been far below normal. Concerning what the future holds no one is venturing an opinion, except that the troubles of the pottery manufacturers cannot become much worse than they are now. Should the men work full time, conditions will be greatly relieved.

Pottery manufacturers, striving against these odds, have been compelled several times to increase their selling lists. While the production has been below normal, the overhead charges have been steadily increasing. Buyers have been in the market and have of their own free will and accord offered higher prices than the manufacturers ask for their merchandise if only prompt shipments would be made. Cases where manufacturers have accepted such offers are few and very far between; the manufacturers contend that regular customers always have the preference. It is no uncommon incident these days to see a large customer of one pottery try to place business with another plant. This class of buyers is meeting with a stiff rebuff, for, under normal circumstances, the new customer would never think of leaving his former connection.

FREIGHT RATES ON COAL JUMP

Within the last few days pottery manufacturers in the western district have been advised that freight rates on coal—which will soon be used in heavy volume by the pottery manufacturers—has been advanced fifteen cents a ton, such increase being allowed by the Interstate Commerce Commission. This will bring the cost of coal in East Liverpool, Ohio, to about $4.10 a ton delivered from one shipping point, or on a basis of $3.25 for run of mine at the mine plus eighty-five cents per ton freight. The increased freight charge was sought by the railroads and authorized by the government. The buyers of finished products may appreciate what this increase will amount to when they consider that the kilns in the East Liverpool district consume on an average of twenty-five cars of coal daily, with cars averaging fifty tons.

GOVERNMENT ORDERS SWAMP POTTERIES

Government orders for sanitary pottery supplies for the army encampments have practically tied up nearly all of the twenty-five or more plants in the East, salesmen gathering at Atlantic City, N. J., for the semi-annual meeting of the association declared recently. Products valued at $1,200,000, completed since the government placed its orders in May and practically commandeered the plants, are occupying all available space pending the order for shipment, which is not expected to be given until the middle of August. The congested conditions are worse in the New Jersey and Pennsylvania plants which obtained most of the government contracts.

Since C. E. Jackson assumed the management of the plant of the Warwick China Co., at Wheeling, W. Va., that concern has come to the front rapidly, and to such an extent that every kiln is in active operation, including one which has just recently been constructed. A general line of domestic pottery was formerly manufactured at the Warwick plant. Soon after Mr. Jackson became associated with the management the line was changed to that of vitreous American china dinnerware and vitreous hotel china. The success of this company has been marked, and it is possible that further extensions to the manufacturing department will be a matter of necessity before long.

The pottery plant recently established at Denton, Tex., by Guy Dougherty is getting well under way. The management looks forward to the increased use of clay containers in place of tin to result in a very heavy demand for the output of the plant. Mr. Doughtery is manufacturing all kinds of crockery, from flower pots up. Just a few days ago he received an order for 1,000 jugs for putting up molasses, as the jugs could be bought for about half the price of tin containers under present conditions.

Decorators in the various potteries at Sebring, Ohio, who recently went on strike, have returned to their places under former terms, and suffered lost time while they were "out." A strike of decorators was threatened among the potteries at East Liverpool, Ohio, about the same time, but the manufacturers in that territory made concessions, and no strike resulted. The decorators do not "belong" to the National Brotherhood of Operative Potters, they having an independent union.

The East Liverpool and Wellsville (Ohio) Newell and Chester (W. Va.) pottery districts, which are virtually one unit, contributed close to $50,000 to the Red Cross fund, or $20,000 more than was asked for. The same district oversubscribed for its initial allotment of Liberty Bonds. W. Edward Wells, secretary-treasurer of the Homer Laughlin China Co., was a leader in the Red Cross campaign, and made a number of open air addresses on behalf of the cause.

Not in years has the demand for electric porcelain ware been as active as is noted in the western district now. Every plant is working to capacity, but the shortage of help is becoming a difficult problem. Heavy electric porcelain pieces are in demand by large power companies, while the smaller pieces are equally in heavy demand. It is predicted that

Tycos
FERY RADIATION
PYROMETERS
Eliminate Guesswork from the Manufacture of All Products requiring extremely high Temperatures ★ ★ ★ ★

We Manufacture - Thermometers and Instruments covering every Temperature requirement in Metallurgy and Chemistry

A Catalog Cheerfully Sent Upon Application

The Taylor-Cambridge Division
Taylor Instrument Companies
Rochester, N.Y.

You can't make us prove the claims we make for

HETTRICK RED STITCHED CANVAS BELTING

if you don't send us that order you have had in mind for a long time. Don't wait until a belt suddenly goes to pieces necessitating your buying whatever you can lay your hands on, quickly.

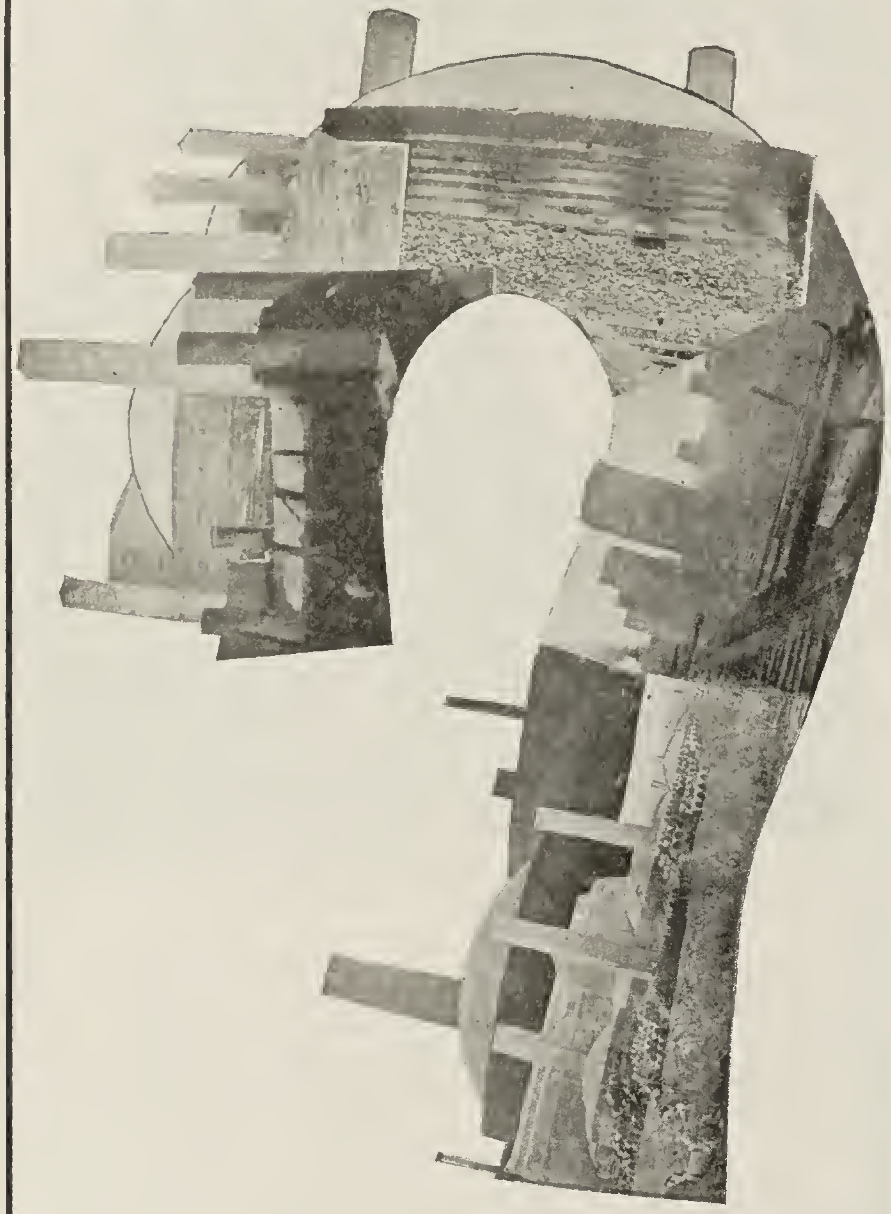
Order some Hettrick sizes now and have them handy for use the minute you need them. Then you'll be glad instead of sorry and you'll give us a chance to "make good" on our claims. Why not do that today?

The Hettrick Mfg. Co.
Toledo, Ohio

Doesn't Slip

Sticks Lasts

IF IT'S A QUESTION OF KILNS—
WE CAN ANSWER IT



Equally efficient in round, square or rectangular kilns, single or multiple stack type. New Hook Kilns cost less, as a rule, than kilns of other styles. Old kilns can be changed to our type at comparatively small expense.
Give us number and size of your kilns, kind of ware, burning time and fuel consumption. We will estimate cost of installation and saving that can be effected.

Grate Bars, Bands, Lugs, Ventilators, Castings

HOOK PATENT KILN CO.
High and Spring Streets
COLUMBUS, OHIO

the demand for small electric pieces because of the federal government building program will be no small item.

The Paden City (W. Va.) Pottery Co., manufacturers of cooking ware, is making extensions to its plant which will greatly increase its capacity. A new building is now being erected in which will be placed the new sagger shop and sagger dryer. Space now used for this purpose in another part of the plant will be used for extensions in the manufacturing department. This plant is controlled by Pittsburgh (Pa.) interests.

William L. Smith, Jr., general manager of the Taylor, Smith and Taylor Pottery Co., of Chester, W. Va., and son of W. L. Smith, president of that company, held an odd record in connection with the draft. Had he been born half an hour earlier than he was, he would not have had to register. He was the first to be drafted in Chester, the sixth in the county and the ninth in his district.

The shortage which will result when the federal draft becomes operative is going to be felt in the pottery district. At Salineville, Ohio, where the National China Co.'s plant is located, six men have been drafted, and a dozen have already enlisted. The same proportion exists in all other pottery plants in the upper Ohio Valley. No help is coming forward to take the places of those who have enlisted.

Because of a strike in the rubber plants at East Palestine, Ohio, numerous rubber workers have taken work in the potteries of that place. Many of the men are experienced in the latter trade, having left the potteries to work in the rubber plants, when they started operations. As a result of the rubber strike the production of the potteries is being increased.

There is reason for believing that a special meeting of the United States Potters Association will be held ere long for the purpose of considering the list of demands that will, in a few weeks, be officially made upon the manufacturers as a result of the deliberations of the National Brotherhood of Operative Potters, which recently closed its meeting at Atlantic City, N. J.

William E. Bowen, a son of Louis S. Bowen, president of the Buffalo (N. Y.) Pottery Co., and formerly a salesman for the company, is now "somewhere in France." A cablegram from son to father told of the safe arrival there of the former.

The Porter Pottery Co., of Clinton, Ky., has occupied a new office building, its former quarters having grown too small to accommodate the clerical staff.

With a capital stock of $15,000, the Hampshire Pottery Co. has been formed at Keene, N. H.

⁂

CERAMISTS HOLD PROFITABLE MEETING

(Continued from Page 210)

pure water having its source in springs, scattered thru the highlands that rise a thousand feet above the level of Seneca Lake to the west of the village of Watkins, and terminating at Entrance Amphitheatre; it is broken in its descent from section to section into cascades and pools of rare beauty. Watkins is an attractive summer resort with the Glen as one of the features and Seneca Lake the other.

After walking down thru the Glen, the party emerged at Franklin Street, the foot of which touches upon Lake Seneca.

From Watkins the party journeyed to Canandaigua, reaching there just in time to take good care of one of Flannigan's famous dinners.

The Lisk Manufacturing Co.'s enameled iron ware plant was inspected at Canandaigua. Here the ceramists saw with much interest the manufacture of enameled iron ware with which every householder is no doubt familiar.

MAKING ENAMELED IRON WARE

Enamel is a porcelain-like refined substance, which is fused over a stamped steel vessel as a protection against the rusting of the vessel and the contamination of any food cooked in it.

The ideal material from a sanitary standpoint for a cooking utensil would be glass and this would also be a cheap material, but its brittleness and fragility bar it at once. So the enameler has taken the desirable qualities of glass and combined with them stability and elasticity, using a steel shape for a foundation and a modified glass for a coating. Ordinary glass is made by melting together sand, lime and soda, which, on account of their large occurrence in the United States, are quite cheap. A glass made from these materials expands and contracts when heated entirely different from sheet steel and thus could not be used as a covering, so additional ingredients must be added to correct this and many of these are quite expensive. Ground quartz and flint are substituted for the sand, and fluorspar for the lime; to prevent chipping, borax from the Great Death Valley is added, and to give the beautiful white color of the lining, tin oxide from the East Indies and cryolite from the Icy Mountains of Greenland must be added. Germany furnishes the saltpetre and some of the clay, or did before the war. The world is searched for pigments such as cobalt, nickel, tin, zinc, copper, selenium, uranium, titanium and chromium which are added for their color effects.

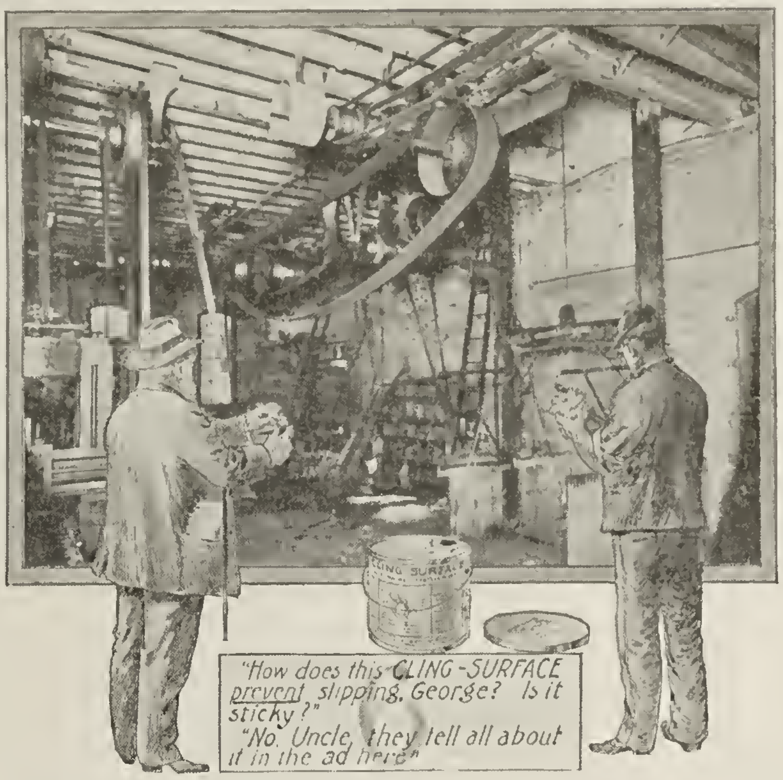
The formulas for the compounding of these materials are the result of the painstaking experimental research of generations of enamelers and are held and guarded as valuable secrets.

PRODUCING THE ENAMEL

The various materials in such a formula are mixed together and melted for four or five hours in a crucible furnace at a dazzling-white temperature and are thus changed to a molten glass. When the mass is just at the right point a plug is removed from the front of the furnace and the glowing liquid stream plunges out and is caught in a tank of cold running water. The reaction is terrific and the glass mass is torn and shredded, cracking into small pieces like pop corn, each of which is a myriad of seams and fissures. This "quenching" as the process is called, facilitates the process of grinding which comes next.

The grinding is done in huge cylindrical mills, which are lined with hard porcelain brick, and the grinding is done by many round flint stones, which are charged in with the "quenched" glass. Water and raw clay are also added at this point. The mills revolve and the constant impact of the stones against the glass particles grinds them to an impalpable powder and this mixes with the water and clay, forming a mass which has the consistency of rich cream.

This enamel is removed from the mill and delivered to


"How does this CLING-SURFACE prevent slipping, George? Is it sticky?"
"No, Uncle, they tell all about it in the ad here"

WHEN "Mike" spits on his hands he does a very natural thing. The tool is slipping because his hands are hard and slippery. Of course he could hold it tighter, but it's easier to soften up the skin. So "Mike" spits on his hands.

We looked at the belt problem this way more than twenty years ago. A leather belt and the palm of the hand are not so very different. Both are skin—one's thicker than the other, that's about all.

The leather is a growth of millions of separate fibres, and is porous. Unlike the hand, it has no life of itself—no natural oils to moisten it—but must be *kept* mellow and pliable.

A grease should be worked into the belt, where it can surround each fibre and lubricate it from its fellows. Thus they will "run in grease" and slide easily as the belt bends, instead of grating harshly together. The belt becomes pliable and mellow instead of dry and harsh. The surface of the belt will be clean, yielding, "velvety," yet not sticky, and will COHERE with the pulley faces.

Now any grease so used has got to be a real preservative food, with no harmful acids, and should not oxidize, turn rancid, form sediment or become stringy. Rosin and rosin oil is condemned by all belting authorities, and various vegetable and mineral oils, in their natural state, cause cracking or rotting within the belt and eventually destroy it.

Sticky belt dressings, while they stop the slipping for a time, are about as bad as glue upon the hands, and for the same reasons.

- - - - -

CLING-SURFACE is a *real preservative* treatment.

A CLING-SURFACE treated belt will run perfectly in all weathers, easy or slack under big overload, without slipping. It will not warp, tear at the laces, separate at the joints or gather static electricity. With CLING-SURFACE the life of the belt is prolonged and its capacity for work greatly increased. It immediately becomes a cheerful, obedient worker, soon needing little or no attention, take-up or protection other than the occasional treatment with CLING-SURFACE, and always working easily, silently and efficiently.

CLING-SURFACE can be applied to *your* belts by any workman in a few hours. A treatment now means a definite step toward permanent freedom from all belt trouble, and money in your pocket with practically no effort to put it there.

Our co-operation will assist you in this work. Let us send you, FREE, the plan 10,000 firms have found successful.

Remember, use CLING-SURFACE and you won't need belt dressings.

Cling-Surface the life preserver for belts
TRADE MARK

CLING-SURFACE CO.
1029 Niagara Street
Buffalo New York U S A

Copyright 1917 by Cling-Surface Co.

the slushing room where it is put into tanks that are like large dish pans. These are sunk into tables and at each tank a man called a "slusher" works. He takes a stamped-out steel vessel, which has been thoroly cleansed and plunges it into the enamel. When taken out, the wet enamel forms a thin film all over it. By a gentle swinging and swirling motion, the excess of enamel is thrown off and the vessel is placed upon a board. These boards are placed on racks and when the vessels are thoroly dry, they are burned in a muffle furnace.

ENAMEL IS FUSED ON WARE IN FURNACE

These furnaces are like ovens in that the flame cannot come into them, but the temperature is kept so high that the inside walls of the oven glow with a bright orange color. It is here that the little powdered particles of enamel are fused together in a solid glass coating over the vessel. Now this coating and all the following coatings must be very thin and, if a thick covering is desired, it must be put on in several coats.

Each of these coats is burned separately. For instance, we have a tea kettle that is to be finished in turquoise blue with a white lining. The vessel is first dipped in the ground coat enamel, the excess of the enamel is shaken off, it is put on a rack and dried. At this stage, the enamel stands in little grains all over the surface of the ware, adhering to the metal on account of the raw clay ground in with it and every care must be taken, for a scraping, even of the finger nail would take off some of the powdered particles of the enamel. This kettle is then put into the muffle of the furnace and the heat fuses all the little particles together and we have a tight-holding vitreous coating all over the surface of the vessel. This coating is nearly black, due to the oxides of cobalt, nickel and copper which it contains and shines with a glass-like luster. The vessel is cooled at the ordinary temperature of the furnace room. The vessel is again brought to the slushing room and here is dipped into an enamel, this time a white enamel, and goes thru the same process as before, except that a black bead is brushed on the rim. On account of the dark color of the first coat and the thinness with which the second coat is fused on, this coating is not sufficient to give the ware the desirable white color and other white coats are slushed and burned on. After the vessel is slushed with the last white coat it is to receive, and while the enamel on it is still wet, the blue-green enamel is sprayed on. The vessel is again beaded and dried and the coating fused on in the muffle furnace, the result being a delicate turquoise mottled with white.

HANDLES AND COVERS PUT ON

All the ware when finished, is sent to the assembling room where it is carefully inspected and handles and covers are put on.

To pass inspection as a "first" a piece of ware must be entirely free from imperfections.

At Canandaigua the interurban was taken to Rochester, where the party put up at the Powers Hotel.

The next day, Friday, July 20th, the ceramists visited the Pfaudler Manufacturing Co.'s plant, where they saw glass enamel steel products made. From the Pfaudler plant, the party motored to the factory of a very large concern making scientific instruments. Recording thermometers and pyrometers were seen made, as well as a number of other devices for measuring temperature and also atmosphric pressure. In the afternoon, after an

Fighting Men

687,000
Drafted.

National Guard
Mobilized.

Regular Army
Increasing.

Navy and Marines
Increasing.

Hospital, Commissary,
Transportation—all
increasing.

Practically one and one-half million men already withdrawn from productive pursuits, or on the verge.

The Automatic
Electric Elevating
Platform Trucks

carry six times as many brick as a man and a wheelbarrow.

Move twice as fast as a man.

Never tire.

Always on the job.

The conclusion is obvious.

When are you going to order yours?

The Automatic Transportation Co.
2933-2965 Main St., Buffalo, N. Y.

Pioneer manufacturers of Electric Storage Battery Trucks, and the only Truck manufacturers awarded Gold Medal at San Francisco Exposition.

appetizing lunch which was served by the hosts at Rochester, principal among these being the Pfaudler Manufacturing Co., the party went to Charlotte upon the invitation of the Pennsylvania Feldsbor Co., where a grinding plant was inspected.

The party broke up at Rochester the evening of the 20th, after a very interesting, profitable and enjoyable five days spent in the Empire state. A list of those present follows:

ROSTER OF THE MEETING

Ross C. Purdy, research engineer, M. F. Beech and Leon Bassett, Norton Co., Worcester, Mass.; Professor and Mrs. Charles F. Binns, Professor and Mrs. J. B. Shaw, President and Mrs. B. C. Davis, and Professor and Mrs. Alonzo Tittsworth, New York State School of Clay-Working and Ceramics, Alfred, N. Y.; M. E. Gregory, proprietor, and Alfred Maltby, Brick, Terra Cotta & Tile Co., Corning, N. Y.; O. C. McCormick, chief engineer, Clay Workers Equipment Co., Akron, Ohio; R. Guy Cowan, Cowan Ceramic Laboratory, Cleveland, Ohio; Edwin G. Zorn, editor, *Brick and Clay Record,* Chicago, Ill.; C. W. Berry, Laclede-Christy Clay Products Co., St. Louis, Mo.; P. H. Swalm, Trenton Fire Clay & Porcelain Co., Trenton, N. J.; A. V. Bleininger, ceramic chemist, United States Bureau of Standards, Pittsburgh, Pa.; Mr. and Mrs. Herbert W. Moore, Atlantic Terra Cotta Co., Perth Amboy, N. J.; R. T. Stull, Conneaut, Ohio; Arthur S. Watts, Ohio State University, Columbus, Ohio; George H. Brown, Rutgers College, New Brunswick, N. J.; Charles H. Kerr, American Optical Co., South Ridge, Mass.; Frederic Carder, manager, Steuben Glass Works, Corning, N. Y.; W. F. Lewis and Clarence C. Keehn, treasurer and general manager, Lisk Manufacturing Co., Canandaigua, N. Y.; G. C. Baker, Pennsylvania Feldspar Co., Boward, N. Y.; Dr. Eugene C. Sullivan, Corning Glass Works, Corning, N. Y.; T. A. Klinefelter and H. A. Wegener, Westinghouse Electric & Manufacturing Co., Derry, Pa.; Mr. and Mrs. A. E. Korman, Kohler, Wis.; H. Schmidt, New York, N. Y.; H. M. Brewster, Chicago, Ill.; J. L. Crawford, Westinghouse Lamp Co., Bloomfield, N. J.; J. E. Randall, Indianapolis, Ind.; R. T. Bowman, J. L. Mott Co., Trenton, N. J.;

Another View of M. E. Gregory's Beautiful Brick Home at Corning, N. Y.

Perfect Mixture

Perhaps the most important feature of the BUCKEYE CLAY DIGGER is its ability to deliver a perfect "top to bottom" mix of your clay bank.

The digging wheel slices off a thin portion each revolution so that an average of the entire bank is secured at all times.

This, of course, indicates that uniformity of manufacture is possible, and a chance to produce uniform ware.

There are other features that are equally important, such as low first cost, low upkeep, eliminating the labor gang, etc. Many plants are using them. Ask for details.

The Buckeye Traction Ditcher Company
FINDLAY, OHIO

J. G. Lord, sales manager, Pennsylvania Pulverizing Co., Lewistown, Pa.; George Hoof, Pass & Seymore, Inc., Solvay, N. J.; De Witt F. Riess, The Vollrath Co., Sheboygan, Wis.; A. E. Gibbs, Pennsylvania Salt Manufacturing Co., Philadelphia, Pa.; John W. Hasburg, 1119 North La Salle Street, Chicago, Ill.; Seiji Kondo, Tokyo Higher Technical Co., Tokyo, Japan; K. Ide, Asaki Glass Co., Tokyo, Japan; T. Kurahashi, Mitsun Co., New York, N. Y.; A. E. Korman, Kohler Co., Kohler, Wis.; F. A. Morgan, Eagle-Picher Lead Co., Chicago, Ill.; John P. Davis, S. S. White Dental Manufacturing Co., Philadelphia, Pa.; A. L. Duval, Hazel-Atlas Glass Co., Washington, Pa.; E. Ward Tillotson, Jr., assistant director, Mellon Institute, Pittsburgh, Pa.; R. D. Landrum, Harshaw Fuller & Goodwin Co., Cleveland, Ohio; A. S. Walden, National Carbon Co., Cleveland, Ohio; Bryan A. Rice, Elyria Enamel Products Co., Elyria, Ohio; Dr. C. B. Thwing, Philadelphia, Pa.; Isaac Mayer, Rochester, N. Y.; E. G. Miner, E. J. Boyle, B. G. W. Miner, R. B. Kilmer, B. S. Chase and F. L. Craddock.

* * *

RATE ADJUSTMENTS *and* TARIFF INTERPRETATIONS

(*Continued from Page* 230.)

bered from first to sixth class, inclusive. Certain articles are rated one and one-fourth times first class, one and one-half times first class, double first class, two and one-half times first class and three and four times first class, respectively. The three remaining classes are rule classes. Articles classified under Rules 25 are rated fifteen per cent. below second, but not lower than third class; under Rule 26, articles are rated twenty per cent, below third class, but not less than fourth class while under Rule 28, articles are rated higher than fourth class by fixed amounts based upon the difference in published rates between third and fourth classes.

In the Western Classification provision is made for sixteen classes: there are five numbered classes, first to fifth; five lettered classes, designated Class A, B, C, D, and E, respectively, and six classes above first, progressing by half classes to four times first class. The Southern Classification provides six numbered classes; seven lettered classes; five classes above first, viz., one and one-half times first, double first, two and one-half times first, three and four times first, respectively, and a class known as one-half F, the lowest lettered class.‡

†The territorial limits of the different classification committees overlap upon certain traffic. For example, freight moving between upper east bank of Mississippi River crossings and the Atlantic seaboard is governed by Official Classification, while traffic moving between the Atlantic and Pacific seaboards is subject to Western Classification. The application of a particular classification in territory common to two, as in the territory lying north of the Ohio River between the Mississippi River, on one side, and Lake Michigan and the Illinois-Indiana state line, on the other, is determined by the particular tariff under which the freight moves.

‡While first class is the basic class in all the major classifications and numbered classes higher indicate that the rates will be relatively lower, there is no fixed relationship between the rates, nor does the class number indicate the percentage relation that that class bears to first class, except in the classes above first, as double first class, etc. For example, second class is not one-half of first, nor third one-third. Second class, however, is always lower than first, third than second, etc. Coming to the lettered classes. Class A in western territory for example, is often the same as or higher than fifth class, while the other lettered classes are lower.

We have plenty of
STEEL

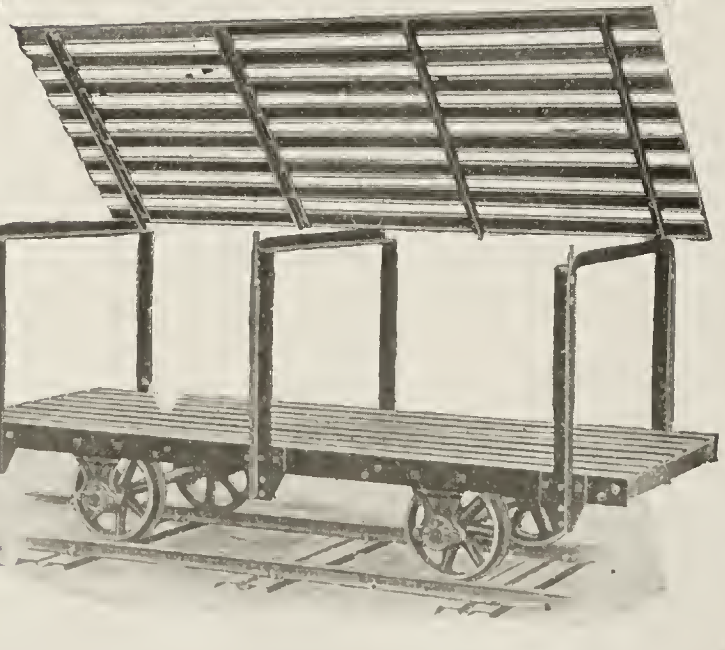
A whole yard full of it. Our purchasing department have used wonderful foresight in obtaining steel in large quantities. For this reason we are in a position to make prompt deliveries on

Dryer Cars
and
V Dump Cars

Yes, steel was and is hard to get; we charged this effort to service. Lakewood customers expect service, and we won't disappoint them.

Leave It to Lakewood

The
Lakewood Engineering Co.
Cleveland, Ohio



MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

Speckled and Grey Brick

There are many plain colored brick in grey, brown and buff that could be made much more attractive and salable by the use of powdered manganese.

The manganese is added in many different sizes, and upon the size and quantity added depend the color or effect produced.

For instance if the manganese is in a very fine powder form and is added to a white or light burning clay the result is a color grading from a very light grey to a dark grey to a black depending upon the amount added.

This procedure produces a tone or a color tending towards the solid, and a coarser material must be used if speckles or spots are desired.

These spots depend entirely on the size of the manganese grain that is added, as the mineral manganese di-oxide does not fuse at the ordinary brick burning temperatures, and the black specks do not flow or fuse or show, ordinarily, any reflected light after the ware is burned and in the wall.

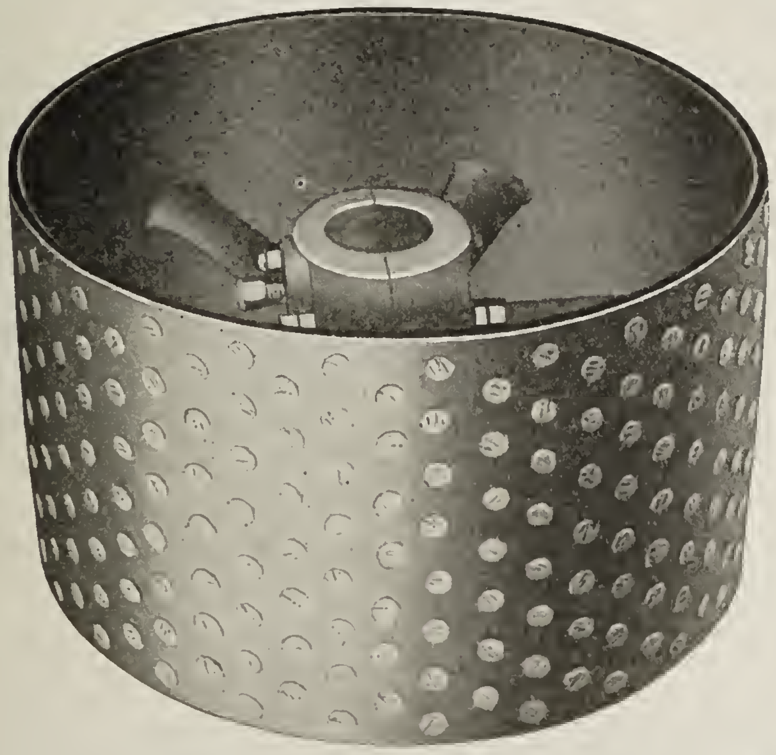
In this way new shades and colors can be added to your line of brick, and this method has in some cases bolstered up considerably lagging interest in an old established line.

The manganese is usually added at the dry pan so that it is thoroly mixed and shows a perfectly uniform face color or spot. Experiments along this line may result very profitably, from a process that is low in cost and not difficult to use. Correspondence with the Crimora Manganese Corporation of 30 E. 42nd St., New York, should produce information of value to you.

* * *

Cork Inserts as Applied to Power Transmitting Appliances

An economical, efficient and almost indestructible means of eliminating losses in power transmission, applicable to nearly every type of friction device, is of undoubted



If Cork Inserts are Used on Pulleys, Excessive Belt Tension is Unnecessary

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.
400 Chestnut Street
Philadelphia, Pa.

You Do Not Burn Sand Lime Brick

Only a small fraction of the fuel necessary in the manufacture and burning of clay brick is required in the manufacture of sand lime brick, and that fuel is used only to produce steam for power and for steaming the brick in the hardening cylinders.

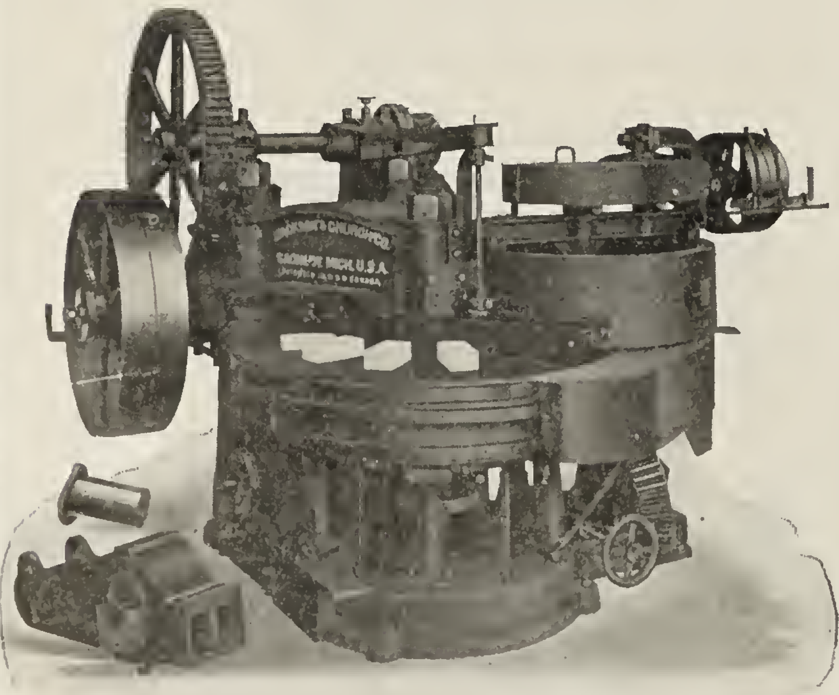
There is a big demand for the clean, white, hard sand lime brick, and the production cost is low.

You will find it to be to your advantage to find out more about our process.

Write immediately to the

Jackson & Church Co.
Saginaw, Mich.

Builders of a complete line of Sand Lime Brick Machinery, Boilers, Rotary Dryers, Kilns, etc.



value to owners, superintendents, master mechanics and others who desire efficient and economical power transmission.

Leading engineers have repeatedly made the statement in engineering publications that the amount of power lost in mills and factories, between its source and the point of delivery, thru the slipping of belts and other friction devices, is far greater than is usually supposed; in some cases running as high as 30 per cent. A reliable and economical method of preventing this loss is of great value and is to be found in the use of Cork Inserts.

WHAT ARE CORK INSERTS?

Cork is the bark of a tree, known as the cork oak, and is the lightest known solid. It has a very high coefficient of friction and when inserted in sockets under high compression is not affected by many of the conditions which seriously impair the efficiency of other substances used for friction surfaces. It possesses a quality not found in any other solid namely, that of altering its volume to a marked degree under pressure, being compressible and resilient.

Cork is made up principally of an aggregation of minute air cells, having thin, air-tight, water-tight and very strong walls. If compressed, the resistance to compression continually grows stronger, in a manner more like the resistance of a gas under compression than that of an elastic solid, such as a spring.

ALL-CORK CONTACT

In this method of construction the sockets are so spaced that the corks occupy a relatively large area and the corks are allowed to protrude above the surrounding surface one-sixteenth of an inch or more, so that they alone come in contact with the opposing surface and transmit all the power. This drive is most satisfactory and efficient where power is transmitted by means of a large area of cork used at light pressure, as is customary on the frictions of looms and similar machinery and in certain types of plate and multiple disc automobile clutches. Many thousands of automobile and loom clutches thus fitted have been in constant operation for years without requiring repairs.

COMPOSITE CONSTRUCTION

In this method of construction the corks are allowed to protrude above the surface of the material in which they are embedded but one thirty-second of an inch, as in the case of pulleys, automobile clutches, street railway brake-shoes, etc. This method gives an almost indestructible combination surface, of high frictional efficiency and great wearing qualities. At low and medium pressures the corks, with a coefficient of friction of say 0.35, work alone; while at high pressures the inserts are compressed into their sockets, and the surrounding metal, wood or fibre also comes into engagement to supplement and protect the corks.

That Cork Inserts used under the so-called composite construction will withstand heaviest loads, constant abuse and excessive heat, is shown by their present use in more than 10,000 motor car clutches.

USE OF CORK INSERTS IN PULLEYS

Power is largely transmitted by means of pulleys driven by belts, and it is generally acknowledged that the capacity of a belt of given dimensions is greater than the capacity of the pulleys over which it runs; therefore, pulleys having high frictional efficiency are most desirable.

The loss that occurs from the slipping of belts reduces product, reaches back to the coal pile, and means waste; while on the other hand the failure of certain machines to operate at the desired speed means loss, and in some cases a defective product.

To eliminate these difficulties, pulleys are lagged and relagged; belts are run under excessive tension, to the injury of the belt, and with an increase in journal friction far beyond economical operating conditions.

If Cork Inserts are used in pulleys, such lagging, excessive belt tension and belt dressing are unnecessary.

Pulleys and friction clutches, from the smallest size to the largest, thus equipped, have a friction surface with a high coefficient of friction, long life and uniformity of action under all conditions of temperature, oil, moisture, etc., features in which they excel all others.

On clay plants where long and short center drives are common, where dust, oil and moisture all combine to cause belt slipping, the Cork Insert pulleys have been signally successful.

The belts are permitted to run loose, yet they do not slip, thus saving power, preventing heating in the bearings, and prolonging the life of both pulleys and belt.

On your next pulley purchase, a Cork Insert Pulley should be tried. The Cork Insert Company, of 168 Federal St., Boston, Mass., will gladly furnish complete information.

⁂

International Takes on New Representative

The most recent exponent of "International Service" in the selling line is Frank A. Elliott, formerly of Toronto, Canada, Mr. Elliott being a Canadian by birth. He has been a clayworker for many years, assisting for some years in the production of one of the few makes of paving block manufactured in the Dominion.

FRANK A. ELLIOTT
New Representative for International Clay Machinery Company

Mr. Elliott is not new to the selling of equipment, as for a couple of years before the war broke out he sold much American equipment in Canada.

In the short time that Mr. Elliott has been with International, he has closed one of the largest orders for equipment ever let in this country, including machinery equipment, Producer Gas Fired Dryer and Producer Gas Fired Kiln.

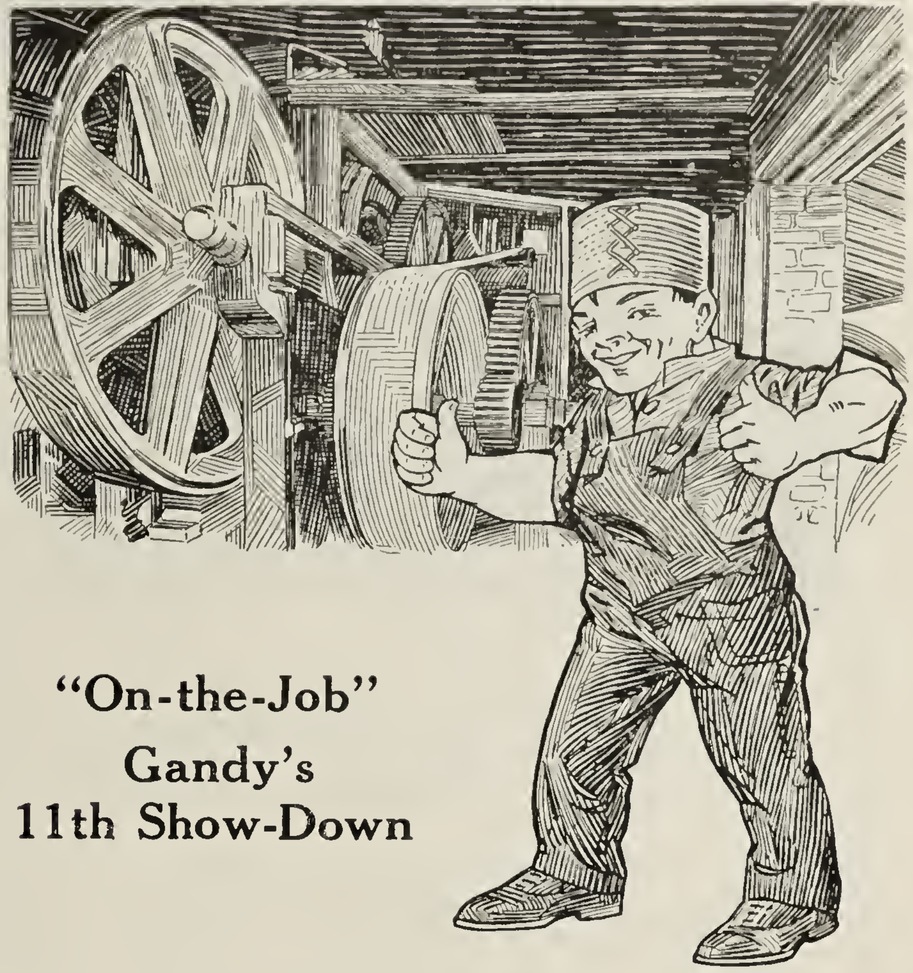
International takes pleasure in presenting Mr. Elliott to American clayworkers.

⁂

Gear and Wire Rope Shields

"Rino" Lubricant is used as a more efficient method to lubricate gears and rope, than the usual oils and greases. It is a compound especially prepared for the elimination of noise, wear and crystallization of gears, at the same time thoroly lubricating them.

It surrounds the teeth of gears and pinions with a tough elastic covering which not only insures perfect lubrication of the adjacent surfaces, but also prevents the actual contact of metal with metal and wearing away of the



"On-the-Job"
Gandy's
11th Show-Down

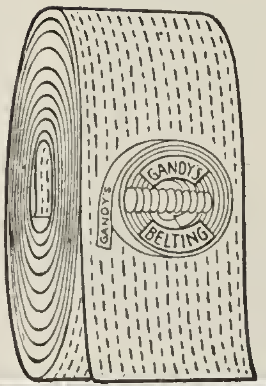
From a Large Pug Mill in New Jersey comes this report about me—the original stitched cotton duck belt.

"'We have not yet succeeeded in wearing out any of our GANDY BELTS. In fact, they show almost no signs of wear, in spite of hard service which brick manufacture puts upon them.'

"I tell you this, not because I'm puffed up with pride at the fine service I'm giving everywhere, but to prove to you that every day, every week, every month you keep me out of YOUR plant you are depriving yourself of a brawny, built-for-the-job profit builder.

"Send for me through your supply house or my home direct. Look me over when I come. My painted green edge and the well-known GANDY trademark will tell you at a glance that I'm the genuine 'On-the-Job' GANDY stitched cotton duck belt—the belt with a 37-year reputation for getting **all the pull from the pulley.**"

Write for samples and prices



The Gandy Belting Company
732 West Pratt St.
Baltimore, Md., U. S. A.
New York Branch: 36 Warren Street

KOPPEL

No Labor-Shortage At This Brick Plant

In this plant Koppel Electromobiles have not only solved labor shortage but also save hundreds of dollars annually.

They are used from the cutting machine to the drying room, from the dryer to the kiln, and from the kiln to the freight car.

Koppel V-shaped dump cars and dinkeys also carry the shale to the shale room.

In many plants Koppel brick and dryer cars of all types are used with Koppel track to transport the brick.

Let us tell you how to solve labor shortage with better results.

Write for Electromobile and Industrial Railway catalog.

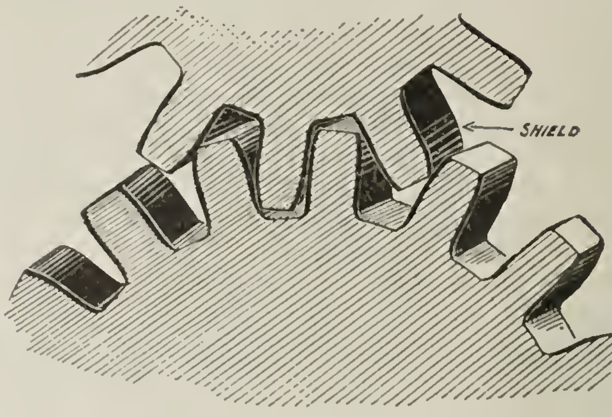
PLANT: KOPPEL, PA.

ORENSTEIN-ARTHUR KOPPEL CO.

Branches all over the World

Sales Offices:
New York
Chicago
Pittsburgh
San Fr'isco

teeth. The shield forms a cushion between the teeth and practically does away with all noise.



"Rino" Lubricant Surrounds the Teeth of Gears with a Tough Elastic Covering

One application of "Rino" will last several times longer and is more economical than any compound made up from oil or grease and will prevent the wear and tear of the metal, to say nothing of the additional life it will add to the gears. The only precaution necessary is to see that the gears and pinions are perfectly cleaned from oil and grease before the first application is made.

In the use of rope and cable the "Rino" rope shield is of great advantage in that it completely penetrates to the heart of the cable and protects each strand from corrosion, and from chafing.

The "Rino" lubricants contain no injurious matter, but on the other hand they have a tendency to protect, thoroly lubricate and prolong the life of the gears and cables.

The Ohio Filler & Shield Company, of Columbus, Ohio, are sending sample trial cans to those requesting them.

⁂

Tycos Catalog

Book No. 4014, a catalog on the base metal Thermo Electric Pyrometers of The Taylor Instrument Company has just been issued and is ready for distribution.

It briefly describes the principle of Pyrometry and shows in detail the Tycos instruments and the methods of using them.

New Catalog on Pyrometers Issued by Taylor Instrument Companies, Rochester, N. Y.

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other Tuesday by

Kenfield-Leach Company
445 Plymouth Court Chicago

Chicago, August 14, 1917
Vol. 51 No. 4

Leading Articles in This Issue

Iowa College Man Wins Essay Contest ... 296
Some New Light On an Old Problem ... 299
U. S. Promises Abundant Crops ... 303
Analysis of Sales Plays a New Role ... 304
Rate Fundamentals and Tariff Interpretations ... 306
The Labor Factor in Setting Terra Cotta Kilns ... 309
Wedded to Brick for Thirty Years ... 313

⁂

The Editor's Corner ... 295

⁂

Special Departments

Business Classification of Current Legal Decisions ... 326
Machinery and Equipment ... 339
Pottery Notes ... 323
Straws That Show the Wind ... 330
The Superintendent ... 315
Wake of the News ... 317

American Clay Mchy. ... 343-345
American Pulverizer Co. ... 356
Armstrong Mfg. Co. ... 321
Automatic Transportation Co. ... 338

Baird M. & Mfg. Co. ... 323
Baldwin Locomotive Wks. ... 357
Ball Engine Co. ... 337
Barber-Greene Co ... 342
Barrett Company ... 347
Beighlee Electric Co. ... 327
Bell Locomotive Works ... 326
Black Diamond ... 340
Bonnot Co. ... 280
Boss Co., J. C. ... 319
Brewer & Co., H. ... 288
Bristol Co. ... 324
Broderick & Bascom ... 317
Brown Instrument Co. ... 353

Canton Grate Co. ... 328
Celite Products Co. ... 319
Chambers Bros. Co. ... 283
Chase Fdry. & Mfg. Co. ... 352
Clarage Fan Co. ... 316
Classified Ads ... 364-366
Cleveland Alloys Co. ... 348
Cork Insert Co. ... 341
Crescent Belt Fastener ... 317
Crimora Manganese ... 319
Cyclone Grate Bar Co. ... 325

Didier-March Co. ... 354
Drymore System ... 320
Du Pont Powder Co. ... 355

Englehard, Chas. ... 358
Exner, J. E. ... 330

Fate Co., The J. D. ... 367
Forester, H. ... 329
Freese & Co., E. M. ... 363

Gandy Belting Co. ... 335
Garnet Co. ... 348
General Electric Co. ... 291
General Store ... 348
Goodrich Co., B. F. ... 287

Hardinge Bros., Inc. ... 317
Harris Bros. Co. ... 365
Hendrick Mfg. Co. ... 352
Hettrick Mfg. Co. ... 320
Hill Clutch Co. ... 317
Homestead Valve Mfg. ... 348
Hook Patent Kiln Co. ... 332

Illinois Boiler Cleaning Compound Co. ... 348
International Clay Mchy. ... 285

Jackson & Church Co. ... 336
Jenkins Bros. ... 327

K-B Pulverizer Co. ... 318
Keystone Driller Co. ... 330
Kissel Motor Car Co. ... 334

Lakewood Engr. Co. ... 333
Lincoln Electric Co. ... 289
Link-Belt Company ... 290

Main Belting Co. ... 281
Manufacturers Equipment ... 282
Marion Machine Fdry. & Supply Co. ... 318
Marion Steam Shovel ... 323
Morgan Co., F. W. ... 316
Morse Chain Co. ... 359

New England Fire Cement Co. ... 324

Ohio Filler & Shield Co. ... 325
Ohio Galv. & Mfg. Co. ... 353
Orenstein-Arthur Koppel ... 331
Osgood Company ... 352
Owens Continuous Tunnel Kiln Co. ... 348

Philadelphia Textile Machinery Co. ... 284
Potts & Co., C. & A. ... 286
Price Electric Co. ... 318

Randall Graphite Sheet Lubricator Co. ... 316
Roessler & Hasslacher ... 326
Rollin Chemical Co. ... 328

Sanderson-Cyclone Drill ... 318
Sauerman Bros. ... 316
Sawyer Belting Co. ... 356
Scandinavia Belting Co. ... 316
Schofield-Burkett ... 354
Smith Co., Claude ... 279
Standard Dry Kiln Co. ... 322
Steele & Sons, J. C. ... 360
Stupakoff Laboratories ... 319
Sturtevant Mill. Co. ... 368

Taylor Instrument Companies ... 321
Thew Auto-Shovel Co. ... 357
Thwing Instrument Co. ... Front Cover
Trade Names ... 349
Trautwein Dryer & Engineering Co. ... 279

Union Chain & Mfg. Co. ... 316

Veritas Firing System Co. ... 329
Victor Balata & Textile Belting Co. ... 352

Wallace Mfg. Co. ... 362
Watt Mining Car Wheel ... 322
Webner Frank E. ... 348
Weller Mfg. Co. ... 278
Westinghouse Electric & Mfg. Co. ... 355
White Company ... 292
Williams & Co., C. K. ... 316
Wood & Co., R. D. ... 339

Youngstown Steel Car ... 329

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

Courage Logic

I

The business situation may cause worry and vexation,
And even frighten some who think in terms of gloom and fear;
It's bad enough to know it, but it does no good to show it
By unloading all your troubles on whomever cares to hear.

II

A lot of fellows living are the poorer for their giving,
To help the burden bearers feel their load a little less;
It's ten to one they're better for the drain on their exchequer,
And the business situation isn't causing them distress.

III

There's trouble for the seeking, and you'll always find it sneaking
'Round the corners and the alleys looking for some gloomy cuss;
But you'll never find it after cheerful, optimistic laughter—
It's a psychologic axiom that fits the most of us.

IV

Tho your business is chaotic if you're feeling patriotic,
Hitch your belt a notch and buckle down to work a little more;
Get your grip a little tighter, be a first line business fighter,
For your Uncle Sam needs courage here, as where the cannon roar.

V

You may think me pedagogic, but there's more to courage logic
Than appears upon the surface, tho you've heard it all before;
For your business and the Nation stand upon the same foundation,
And it's stamina and courage makes them solid to the core.

—*Frank Adams Mitchell.*

The EDITOR'S CORNER

Our Allies

ALL BUILDING MATERIALS have a common enemy. It is the disposition of the American public to postpone building "until after the war." This enemy is making his drives felt; his raids upon the business of the clay products manufacturer, as well as the manufacturer of and dealer in other building materials, are daily growing more serious.

We need have no fear of this enemy. We are much stronger than he is and can "lick the tar" out of him if we will exert ourselves a little. We are a great deal like our corpulent and opulent "Uncle Sam"—our muscles are all right but they have become flabby for the time being on account of a lack of exercise. Fortune has been kind to us. We have not had to do much digging for business during the past two years and we have forgotten for the moment how it feels to go out after the trade.

Building has hit the toboggan, due to a wrong impression in the minds of the building public and we must get mighty busy to disabuse this false idea. Building is slowing up because people think the price of material is too high. They think that as soon as the war is over prices will fall. Note, please, building is not slowing up because there is no money available for building purposes. There is more money in the banks now than there ever has been in the history of the country. At the last national bank call, on June 20, resources to the amount of $16,151,000,000 were reported. This is the highest amount ever recorded and is $2,224,000,000 better than June 30, 1916. These figures do not indicate much of a cash scarcity.

In addition to the large amount of money in the banks and in circulation, everybody who wants to work has a job and wages are higher than they have ever been in the history of the world. On top of this the report comes that the country is to have a record-breaking crop of all farm products.

It seems exasperating to think that in view of the tremendous need for structures of all kinds, with the above outlined conditions existing, that there should be a falling off in plan filings. It is simply the result of a state of mind which the clay products manufacturer and dealer, as well as the manufacturer of and dealer in all building materials, must get everlastingly busy to change. How can it be done?

In the first place, ADVERTISE. Spend a little of that money you have made during the recent fat years to tell the people that they are on the wrong track. Buy some space—a lot of it—in your local newspaper, or papers, and tell the people that today one bushel of wheat buys two dollars' worth of building material. Three years ago it bought only one dollar's worth. Show them by actual figures from your own local community that building materials have increased only slightly, comparatively speaking, and that there is every reason to believe that there will be a tremendous demand for materials, both at home and abroad, immediately after the war is over. Urge them to BUILD NOW and not wait until big building operations start to move and better housing projects are under way, as well as a tremendous expansion in the country's factory facilities, before starting to build. Then building will really be expensive, made so by a heavy demand for materials and congestion in delivery channels.

The work of overcoming the present inertia in the matter of building is a big one, requiring the combined effort of all concerned. Any imaginary dividing lines as between materials should be wiped out in one gigantic effort to start something. Manufacturers of and dealers in all building materials should pull together, should all advertise, write and shout the one urgent message—BUILD NOW. The old story, read in childhood days in the little red school house, now only a dim recollection with the passing of the years, which used the bundle of sticks to illustrate the truth that in union there is strength, has worn pretty well and brings to our mind the fact that co-operative effort, after all, is most effective.

The two complete building shows, one staged in Cleveland last year, and the other in New York the early part of 1917, in which all materials, including clay products, lumber, cement, metal specialties, etc., were represented, proved to be a healthy stimulant to building in both cities, especially in Cleveland. These shows would hardly have been possible with one material "going it alone." The clay products manufacturers who had booths in the "Sixth City" show and the few who bought space in the New York exposition testified to the fact that they have cashed in on their investment.

These shows have shown the possibilities that go hand in hand with concerted and co-operative action on the part of a number of strong interests all seeking the one end—namely, that more people build soon.

The experience of the past contains suggestions for the future. In the coming months the die will be cast —what we do in the near and immediate future will determine to a large degree the extent of our prosperity during the coming year. Make the nation ring with the clarion call to action—BUILD NOW. Let us sound out the message with all the power we possess—the allies pulling, and all pulling together.

IOWA COLLEGE MAN WINS ESSAY PRIZE

Burton T. Sweely, One of the Winners in "Brick and Clay Record's" First Ceramic Students Essay Contest, Takes First Place in Second Competition and Receives Complete Set of American Ceramic Society Transactions, Bound in Cloth, and Valued at Over One Hundred Dollars

MARS DID HIS BEST to scuttle the well laid plans for *Brick and Clay Record's* Second Ceramic Students' Essay Contest, but failed by just four men. When the details of the contest had been decided upon last year no one could foresee the entrance of the United States in the European War, and so no provision was made for such an emergency, nor did any one dream that it would have the effect upon the colleges and universities of the country that it has had.

With close to three times as many students registered as participants in the contest than in the first competition, the prospects for its success were very bright, and the probability of some very valuable papers being presented was highly encouraging—until the war came, which knocked the whole business into a cocked hat.

COLLEGES HARD HIT BY WAR

The Red Cross, aviation corps, the National Guard, officers' training camps, and what not, seemed to have picked out the universities and colleges as their favorite recruiting grounds, and well they might, for where else would one look to find the pick and cream of the nation's manhood, both from an intellectual and a physical standpoint? May 15 had been set as the day on which all contributions for the contest were to have been filed with the Editor, but along about the first of April, when most of the students would have been busy upon their papers, the war came and made some very great changes in their plans, ultimately resulting in the elimination of all but four candidates, who submitted in all three papers. These men, B. T. Sweely and Lowell Hewitt, of the Iowa State College; F. L. Steinhoff and J. W. Wright, of the University of Illinois, followed out their original intentions and submitted their papers.

An interesting side light upon the depletion of the ranks of the student body is given in a letter received from Arthur S. Watts, of the Ohio State University, under date of May 22.

"You can hardly appreciate the conditions at this institution at the present time. Three-fourths of the student body have been forced to leave school for various military and preparedness services, and manufacturers are now clamoring for any kind of student help that they can secure, with the result that only by supreme effort are we holding our organization together until the school year closes."

CONTEST CONTINUED IN SPITE OF OBSTACLES

While *Brick and Clay Record* might well have been justified in abandoning the project, in the face of the exigency which had been unlooked for and unexpected, it was decided that in justice to those who submitted papers, in spite of the college situation, that the plans for the contest would proceed, the papers be judged, and the prize awarded to the best paper of the three. Our good judgment in following such a course has been vindicated in the quality and value of the winning paper, which we feel is well worth the one hundred dollar prize offered.

The papers were forwarded to A. V. Bleininger, ceramic chemist for the United States Bureau of Standards, Pittsburgh, Pa., who decided that the paper submitted by Burton T. Sweely, of the Iowa State College, was the best, and awarded it the highest grade, which was eighty-eight per cent. In this connection Mr. Bleininger says

The Judge—A. V. Bleininger.

TRANSACTIONS AMERICAN CERAMIC SOCIETY
TRANSACTIONS AMERICAN CERAMIC SOCIETY
TRANSACTIONS AMERICAN CERAMIC SOCIETY
TRANSACTIONS AMERICAN CERAMIC SOCIETY
TRANSACTIONS AMERICAN CERAMIC SOCIETY

The Winner—Burton T. Sweely.

concerning Mr. Sweely's paper, which had been given the number one:

"Permit me to state that paper No. 1, which received a grade of eighty-eight per cent., is a very good one, and well worth publishing. It is undoubtedly the best of the three, and contains most valuable information."

WHAT PAPER COVERS

This paper, which is a study of the effect of variations in the moisture content and pressure used in manufacture on the properties of burned clay wares, and which appears on page 299 of this issue, seeks to dethrone the popular conception among brickmakers and ceramists that a brick made by the stiff-mud process gives a denser brick, other things being equal, than a brick made by the soft-mud process. It also shows that a soft-mud consistency in a clay mass gives a denser structure to the finished brick than a piece of ware made by the casting process would give.

This theory is accompanied by data obtained by experiment, which proves the theory, or in other words, makes it a fact. The paper ought to be of extreme interest to all men engaged in the manufacture of pottery and the cruder clay products, and will act as final judgment on several discussions which have appeared in this journal on the comparative densities of brick made by the stiff-mud, soft-mud, and dry press processes.

The second part of the paper, to be published in next issue, gives data on results obtained by varying the pressure of the clay passing thru the die.

* * *

Clay Products Bureau Formed on Pacific Coast

The Clay Products Bureau was organized in San Francisco, Cal., during the week ending August 4, following a number of conferences at the Palace Hotel and Commercial Club, in which representatives of clay products companies in the sweep of country from Los Angeles to San Francisco, Salt Lake, and Seattle participated. The chief object of the association is to increase friendly business relations among the members and to increase the use of vitrified clay sewer pipe. Altho the present membership consists almost entirely of sewer pipe manufacturers, it is intended to gradually extend the organization to include the entire clay products industry on the Pacific Coast.

The annual output of the companies in the association is estimated at 18,000,000 feet of vitrified sewer pipe. Provision is made for a paid secretary and a chief engineer for the entire Coast and division engineers for each of the three districts, into which the territory has been divided. Seattle, Wash., is headquarters for the northern district, San Francisco for the central district, and Los Angeles for the southern.

The officers of the Clay Products Bureau are: Chairman, George Chambers, of Gladding, McBean & Co., San Francisco; vice-chairman, H. C. Maddox, of Sacramento, Cal.; secretary, Frank Costello, of the California Pottery Co., San Francisco and Oakland, and treasurer, George D. Clark, of N. Clark & Sons, San Francisco and Alameda. The executive committee includes: H. J. Crowe, of the Denny-Renton Clay & Coal Co., Seattle, Wash.; W. E. Piollet, of the Washington Brick, Lime & Sewer Pipe Co., Spokane, Wash.; E. M. Durant, of the Pacific Sewer Pipe Co., Los Angeles, Cal., and Frank Costello.

Others attending the meetings not already mentioned are: Howard Frost, of the Los Angeles Pressed Brick Co.; L. C. Balch, of the Pacific Tile & Terra Cotta Co.; P. McBean, Atholl McBean, A. J. Gladding, and A. L. Gladding, of Gladding, McBean & Co.; S. V. Costello, of the California Pottery Co.; W. E. Dennison, of the Steiger Terra Cotta & Pottery Works; E. C. Hamlin and Niles Wretman, of the Pacific Coast Pottery and Terra Cotta Co., and Leslie Squires, of the Utah Fire Clay Co.

Trench Digging Under Way at Louisville Cantonment

WHEN THE UNITED STATES ARMY cantonment at Louisville is completed about the first of September or shortly thereafter, it will have buried underground a total of about seventy-five cars of P. Bannon Pipe Co.'s burned clay sewer pipe. The order for the pipe went to the Bannon company with practically no competition, in view of the fact that any competitor would have had to ship into the city. All No. 1, standard weight pipe is going into the ground and is going in to stay. The work is being rushed energetically and on a recent date there were 500 men laying sewers on the camp ground. No trench machines were in use at that time, altho the contractor for the cantonment expected to put some to work shortly.

One of the reasons why the camp was located at Louisville was that a connection with the city sewer system could be given. This involves the construction of about 12,000 feet of 24-inch and 30-inch sewer by the county, for which a special levy has been ordered that will yield $125,000. The contracts were let immediately for about 5,000 feet of the 24-inch sewer pipe construction, while the remainder, about 7,300 feet, is being constructed of Amco segmental tile, also furnished by the P. Bannon Pipe Co. It is interesting to note in this connection that the contractors were given their contracts on a Saturday. That afternoon they called the Bannon company and on Monday morning were actually putting the pipe in the ground. All of this work, in the camp and out of it, is being done in a first-class manner and will last as long as there is use for it, whether the camp remains on the ground or not.

A. P. McDonald, sales manager for the Bannon company and who landed the contract, said that he believed the company would be able to turn out all the pipe that would be required. There was a stock on hand of about half the amount needed and the plant was immediately set to turning out more. If the number of men laying the pipe is increased largely it is possible that the company will have to call for help, but Mr. McDonald does not believe that this will be necessary. All of the pipe, ranging from 6-inch on up to 24-inch, was sold f. o. b. the plant and the government is doing the hauling, a large number of army trucks having been sent to Louisville for this and other purposes.

Trench Digging, Not Practice But Actual, at the Louisville Cantonment. This Line of Sewer Pipe When Laid Will Connect the Sewer System of the Army Camp with That of Louisville.

The order, while a big one, is not so large that it is a novel one for the Bannon company, which has frequently handled bigger jobs, tho seldom has it been called upon to make deliveries as expeditiously. The regular market price was paid for all this pipe.

Some of the Most Important Trenches to be Dug in the Gigantic Struggle Ahead Will Be Those for the Burned Clay Sewer Pipe Which will Guard the Health of "Uncle Sam's" Soldiers. The View Above is That of the Cantonment Going Up at Louisville, Ky., and a Large Part of the Scenery is Vitrified Sewer Pipe.

SOME NEW LIGHT
on an OLD PROBLEM

The Winning Paper in "Brick and Clay Record's" Second Ceramic Students' Essay Contest Which Proceeds to Prove a Theory That Rather Upsets Some Long-Accepted Facts Concerning the Relative Densities of Clay Wares Made by the Soft-Mud, Stiff-Mud and Dry-Press Processes

By Burton T. Sweely, B. S. in Cer.
of Iowa State College, Ames

IT HAS LONG BEEN ACCEPTED as almost an axiom, that other things being equal, any increase in the moisture content in a clay mass during the process of manufacture, would result in a more porous finished product. From a consideration of the physical principles involved, brought out by Professor H. F. Staley during a discussion of this matter, the writer was led to question the accuracy of this general belief for the following reasons:

It is now held by leading ceramists that a clay owes its property of plasticity to surface tension forces acting in the thin films surrounding the fine grains of the minerals of which clays are composed, and that the degree of plasticity is determined, not by the average fineness, but by the fineness and quantity of the finest grained material. Indeed, it is quite generally believed that a large part of these are so fine as to be in the colloidal state. When in a plastic condition, these finely divided minerals are surrounded by films of water, the plasticity of the mass depending on the mobile tenacity of the films. Each film being in contact with the others adjoining it, the clay mass is held together by the surface tension exerted upon one another and on the clay grains by the films.

In normal drying, the wet clay gives up the water which forms the films, and as the thickness of these films decreases, the clay grains are drawn closer and closer together by the surface tension of the water films. The clay grains suspended in their respective water films and free to move, as is the case when the clay is thoroly wet, will be drawn into more intimate contact than can ever be attained by mechanical pressure exerted upon a stiffly plastic clay. However, once the grains are all wetted and the films have reached the maximum thickness at which surface tension forces are active, any further addition of water will destroy surface tension and plasticity. The grains will simply float in the water, forming a clay slip.

Should the water content be too small, as is the case in dry-pressed ware and very stiff mud, the thickness of the films is so small that plasticity is not fully developed, since the grains cannot slip and slide upon one another.

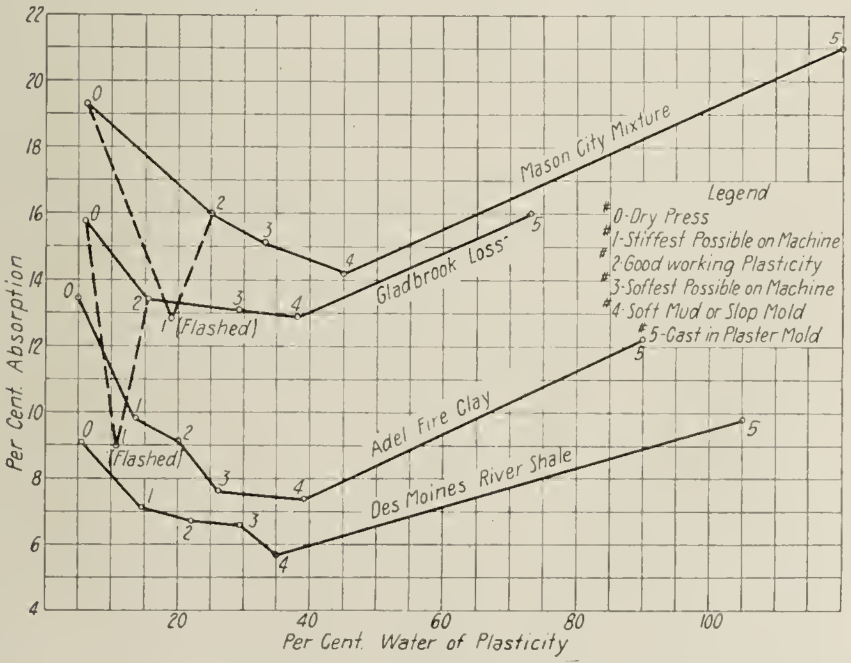


Fig. 1. Showing How the Amount of Water Added to Four Different Iowa Clays Affected Their Absorption. In Every Case a Minimum of Absorption Is Secured for the Soft-Mud Samples.

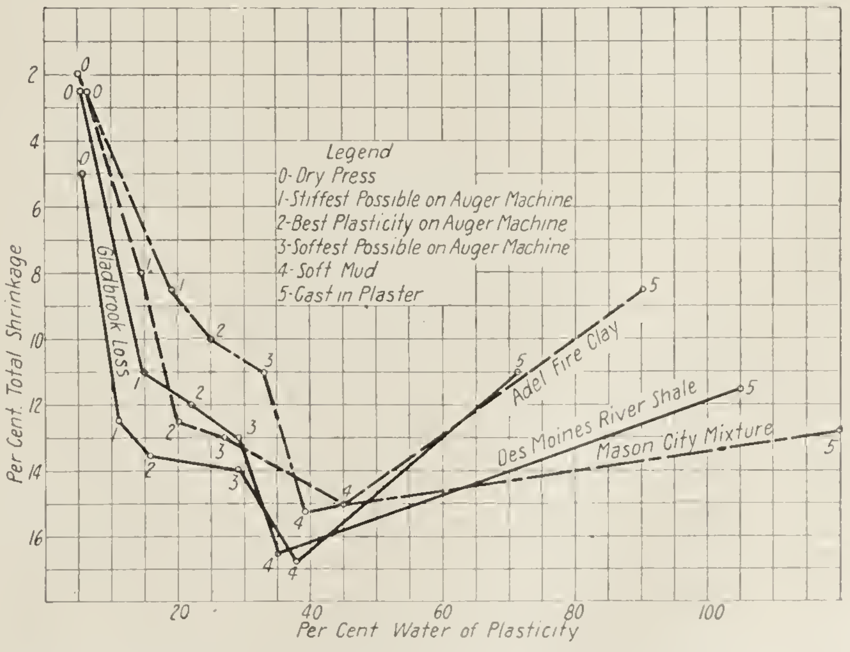


Fig. 2. Showing the Relation Between the Quantity of Water Added to the Four Different Clays and Their Total Shrinkage. A Maximum Shrinkage Is Secured for the Soft-Mud Samples.

For this reason dry-pressed ware will have a much greater absorption than ware made by the plastic process from the same clay.

The manufacture of clay wares by the usual stiff-mud process necessarily uses the clay in a more or less stiffly plastic condition, i. e., all the grains do not have a maximum thickness of water films, since, were this the case, the clay would be too soft to work well in the auger and thru the die. In the soft-mud or slop-mold process, however, the clay is in a more nearly plastic condition; that is, each grain, or at least a much larger number of grains, has sufficient water, hence the softness and extreme mobility of the clay in working. In the last case, the clay is in a much better condition to dry down to a compact body, as explained above, than is the case with a die-formed ware; and, contrary to the usual belief, the result is a more dense product.

EXPERIMENTAL WORK

The above physical principles having been carefully considered, it was decided to run a series of tests on different clays, to see if it were possible to determine the validity of the conclusion arrived at in the last paragraph. The tests were carried out on four clays, each typical of a class of Iowa clays. They were a loess from Gladbrook, Iowa, a number two fire clay from Adel, Iowa; a shale from the formation known as the Des Moines River Shale, and a mixture of 80 per cent. Mason City shale and 20 per cent. sandy glacial drift from over the shale.

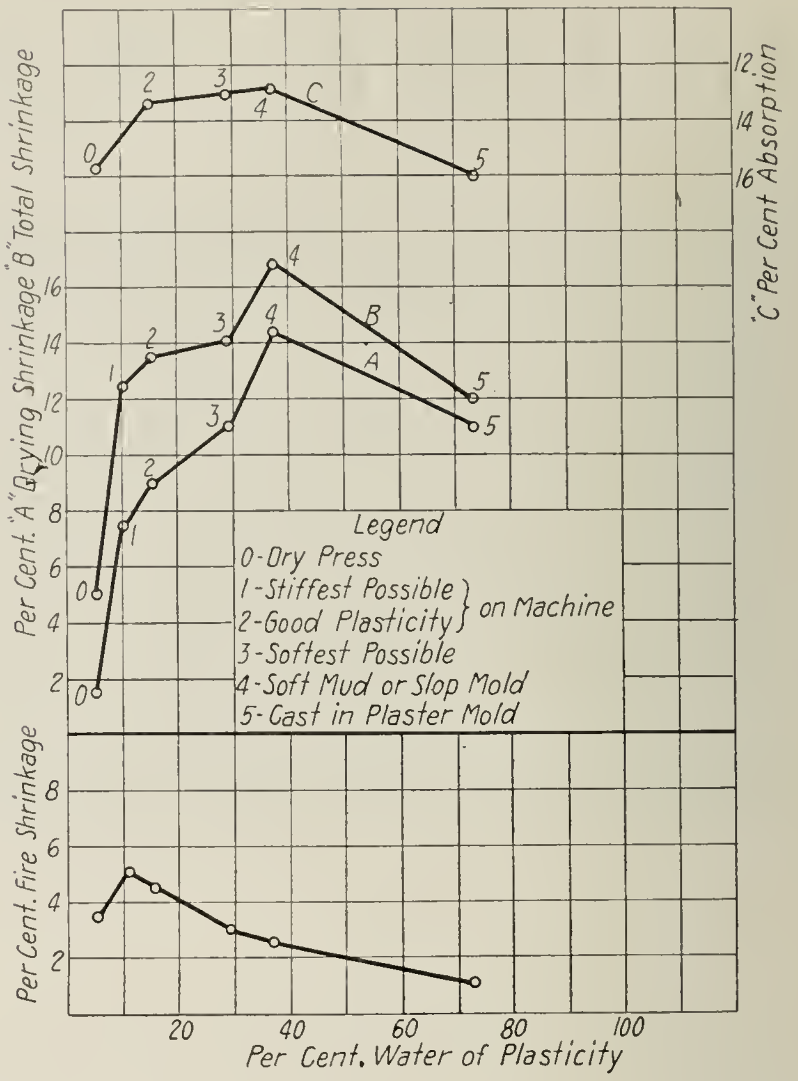


Fig. 3. The Relation Between the Amount of Water Added to a Gladbrook (Ia.) Loess Clay and Its Percentage of Fire Shrinkage, Drying Shrinkage, Total Shrinkage, and Absorption Are Plotted on the Above Graph.

METHOD OF MAKING TESTS

These clays were run under six different conditions of moisture content, as shown in Table 1. No attempt was made to use the same per cent. of water of plasticity for the corresponding samples of each clay, as it is a well known fact that there is a wide variation in the water needed for different clays. The clays, in the processes of manufacture, were all worked at about the same consistency, determined by the judgment of the operator, and

TABLE I

Gladbrook Loess

Method of Manufacture	Water of Plasticity	Absorption	Fire Shrinkage	Drying Shrinkage	Total Shrinkage
0 Dry press	5.6	15.8	3.5	1.5	5
1 Stiffest possible in auger machine	10.8	(flashed) 9	5	7.5	12.5
2 Best working plasticity on auger machine	15.5	13.4	4.5	9	13.5
3 Softest possible on auger machine	29.3	13.1	3	11	14
4 Soft mud or slop mold	37.8	12.9	2.5	14.3	16.8
5 Cast in plaster molds	73.2	16	1	11	12

Des Moines River Shale

Method of Manufacture	Water of Plasticity	Absorption	Fire Shrinkage	Drying Shrinkage	Total Shrinkage
0 Dry press	5.4	9.1	2	0	2
1 Stiffest possible in auger machine	14.7	7.1	6	5	11
2 Best working plasticity on auger machine	22	6.7	6	6	12
3 Softest possible on auger machine	29	6.6	5.5	7.5	13
4 Soft mud or slop mold	35	5.7	6	10.5	16.5
5 Cast in plaster molds	105	9.8	4.2	7.3	11.5

Adel Fire Clay

Method of Manufacture	Water of Plasticity	Absorption	Fire Shrinkage	Drying Shrinkage	Total Shrinkage
0 Dry press	5	13.4	1	1.5	2.5
1 Stiffest possible in auger machine	13.2	9.8	2	6	8
2 Best working plasticity on auger machine	20	9.1	2.5	10	12.5
3 Softest possible on auger machine	26.3	7.6	2	11	13
4 Soft mud or slop mold	39	7.4	2	13.2	15.2
5 Cast in plaster molds	90	12.2	1	6.4	7.4

Mason City Mixture

Method of Manufacture	Water of Plasticity	Absorption	Fire Shrinkage	Drying Shrinkage	Total Shrinkage
0 Dry press	6	19.3	1.5	1	2.5
1 Stiffest possible in auger machine	19	(flashed) 12.8	2.5	5	7.5
2 Best working plasticity on auger machine	25	16	2.5	7.5	10
3 Softest possible on auger machine	33	15.1	3	8	11
4 Soft mud or slop mold	45	14.2	3	12	15
5 Cast in plaster molds	120	21	3	8.2	11.2

the water of plasticity for each clay afterwards determined.

The data taken were absorption, the water of plasticity, linear drying shrinkage, and linear total shrinkage, the difference between the latter two being the fire shrinkage. The absorption of the burned samples was taken in the usual manner, after submerging in boiling water four hours, and results expressed in per cent. of dry burned sample. All shrinkages are in terms of wet clay. These data are given in Table 1.

The samples taken from the auger machine were cut from a section of the clay column, stamped with shrinkage marks and all handled in exactly the same manner, in order to avoid so far as possible any variations due to handling, as pointed out by Bailey in Transactions A. C. S., Vol. XVIII, page 557. The dry-press samples were used just as formed by a powerful screw press in a small sample die, after reference lines had been marked and measured upon them. The soft-mud samples were made in a small hand mold, dumped onto a sanded pallet and reference lines marked on them. The drying shrinkage of the cast pieces was secured by measuring the length of the mold, and the dried sample, the fire shrinkage by stamping a shrinkage mark on a partially dried cast sample and measuring when dry and after burning. All samples were air-dried at room temperature.

The trial pieces were burned in a round, down-draft commercial kiln to approximately 1,700° Fahr. in a sixty-five-hour burn. The samples were set rather close to the bag wall, all but two of one complete set being placed in a sagger. These two samples and the duplicates were exposed to the direct action of the fire gases, and for this reason showed a considerable variation in absorption and shrinkage, hence it was thought best not to include them in the data. The two samples marked as "flashed" in the table are the two which were exposed to the direct action of the fire gases. The small space occupied by the samples compared to the total kiln space, must have given a very uniform heat treatment to the sagger enclosed samples.

RESULTS OF TESTS

A glance at the curves in Fig. 1 shows at first a decided and consistent decrease in the absorption of all the clays for each increase in the water content. In every case a minimum absorption is secured for the soft-mud samples, after which there is an increase for the cast pieces. This would seem to indicate that a much more compact arrangement of the clay grains is attained by the surface tension pulling in all directions, as is the case in the drying of a thoroly wet clay, than can be attained by the pressure exerted on the clays in forcing them thru the die of an auger machine or in the dry press method of manufacture.

The phenomena of the increase of absorption of the cast pieces might be explained by the effect of the plaster drawing the water so rapidly in one direction. Under these conditions there would not be the opportunity for the grains to work into the most compact mass, but they would tend to pile up and form minute bridges, resulting in a more open structure.

The curves of Fig. 2 readily show that the total shrinkage agrees very closely with what would be expected from a consideration of the absorption data. A maximum is reached for the soft-mud samples, and thereafter decreases for the cast pieces.

Figures 3, 4, 5, and 6, show the fire, drying, total shrinkages, and absorption for each clay. The drying and total shrinkage increased very rapidly to a maximum at the soft-mud process, while the fire shrinkage is very nearly constant. In a general way, the decrease of absorption parallels the increase in drying shrinkage. This plainly indicates that the decrease in absorption is not due to any material difference in action during burning

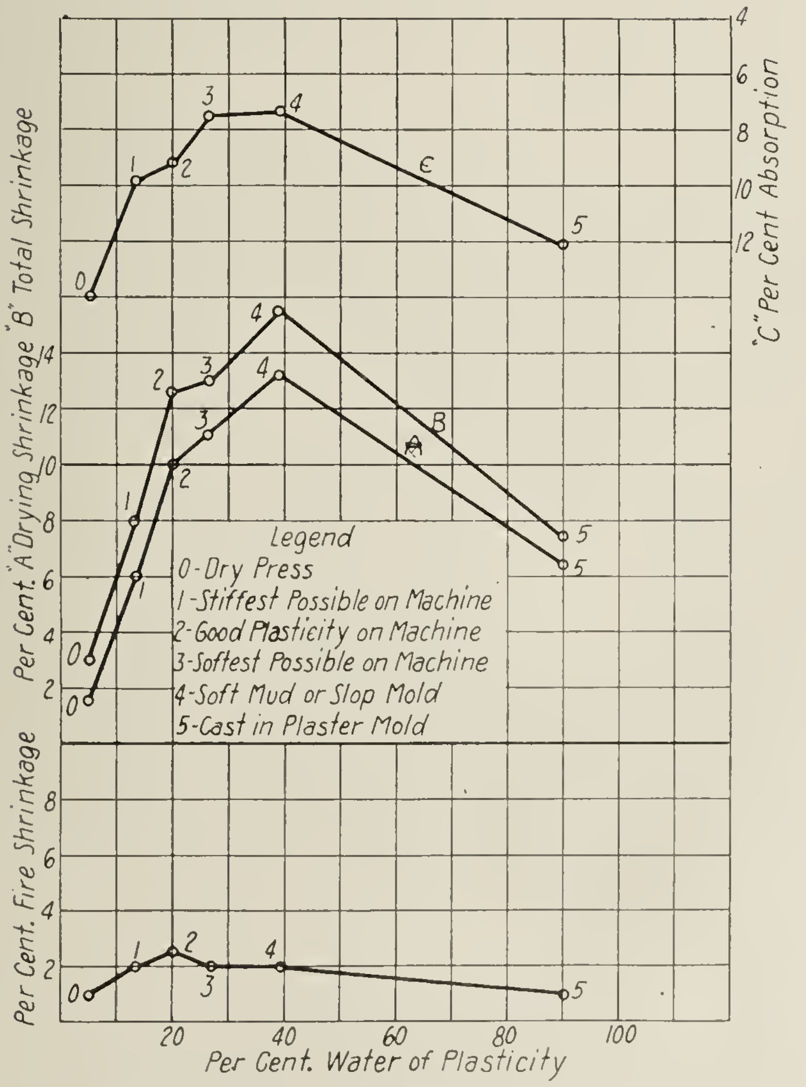


Fig. 4. These Curves Show How the Water Content Affected the Fire, Drying, and Total Shrinkages, and the Absorption of the Adel Fire Clay.

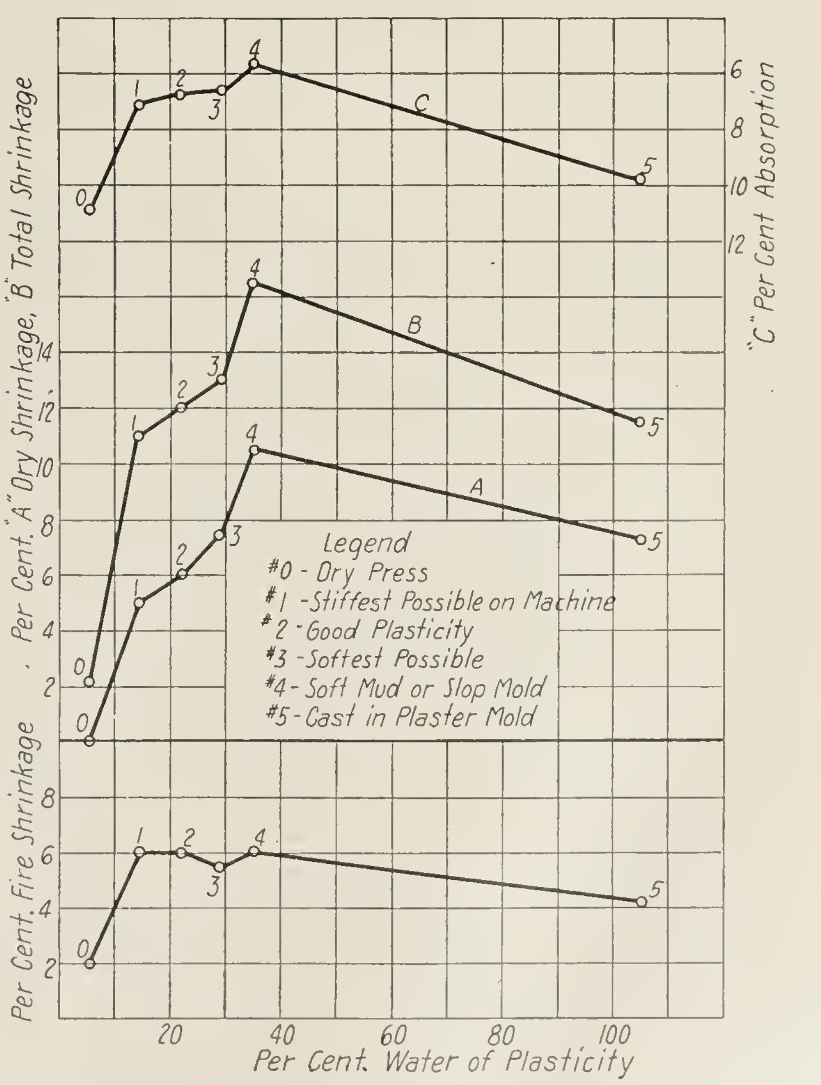


Fig. 5. The Drying, Fire, and Total Shrinkages and the Absorption of a Des Moines River Shale, as Affected by the Quantity of Water, Are Represented in these Curves.

but to the more compact arrangement of the clay grains during drying.

CONCLUSION OF PART I

It is very evident, therefore, from the above results, that increase in the water used in forming clay ware up to the point where it starts to form a slip, other things being equal, will result in a more dense finished product. It would then seem advisable to work a clay as soft as it can be handled safely, instead of working it as stiff as possible in the hope of securing a less absorbent finished product by virtue of the pressure necessary to force it thru the die. The increase in density seems to be due to the very dense packing of the clay grains during drying.

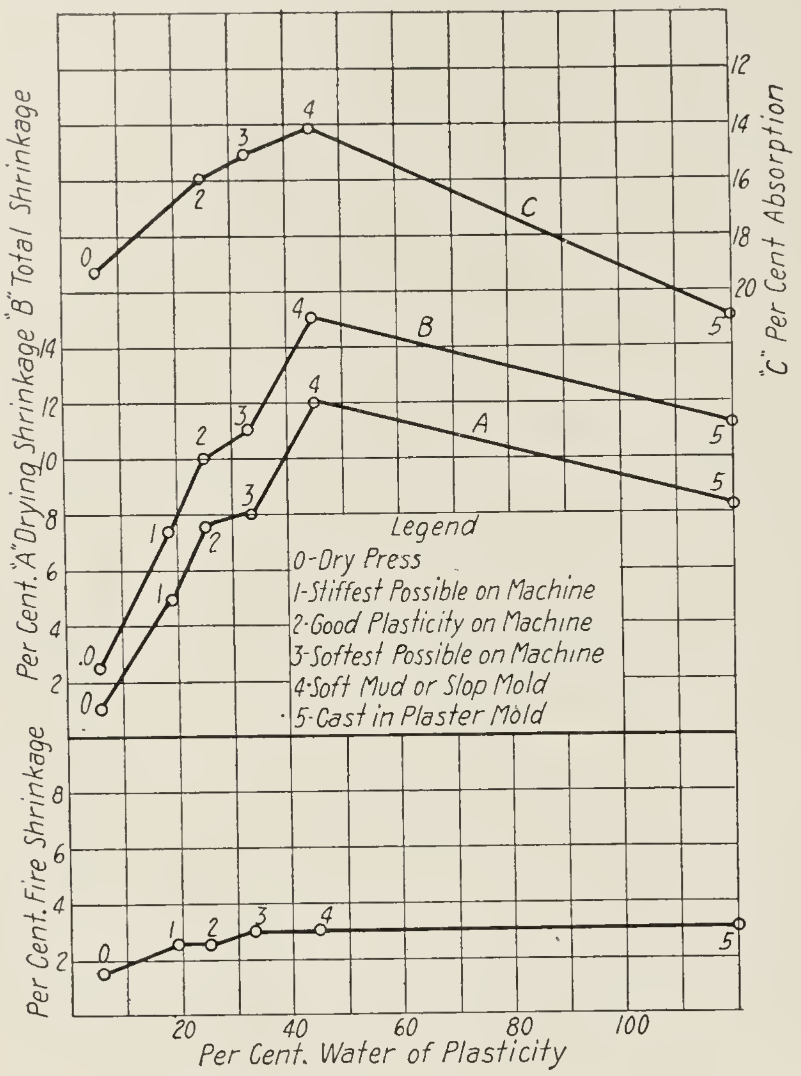


Fig. 6. The Affect of the Water Content Upon the Properties of a Mason City Mixture Is Shown by the Curves in the Above Drawing.

It has long been known by ceramists and clay products manufacturers that the soft-mud process would give a much more uniform structure and better product than could be attained by other methods of manufacture. The poor quality of these products in the past has been due to the fact that they have not been handled carefully, and have not been burned to the same temperature as other wares. Other things being equal, this process gives a denser product than any other method of crude clay ware manufactured, due to the freedom from internal weaknesses, such as lamination and slicked surfaces. It would seem entirely feasible to make high grade products by this method.—*(Part II in Next Issue.)*

⁂

Sewer Pipe Association Issues Booklet

"About Culverts" is the name of a booklet just issued by the Sewer Pipe Manufacturers' Association, of Akron, Ohio, of which John L. Rice is field commissioner, treating of the use of vitrified clay pipe in the construction of culverts and side drains. The book is very profusely illustrated and pictures many types of burned clay culverts. It gives some very interesting data regarding the different types of culverts, the materials used in their construction, and causes for their failures. Tables are included in the booklet which give the relative cost of vitrified clay pipe culverts as compared to corrugated iron pipe culverts, and the quantity of materials entering into, and cost of, different types of clay pipe culverts.

In the first paragraph is presented some very valuable information regarding the location, size, and type of culverts to be used. The four features which determine the most economical and advantageous type of culvert, according to the booklet, are:

1. The water-shed to be drained.
2. Ordinary and extraordinary rainfalls.
3. Direct access for drainage, a maximum capacity with a minimum area for friction.
4. The nature of the culvert foundations and the foundation bed.

A statement then follows of the different types of culverts in common use, after which is presented as the principal causes for failures of apparently well built culverts, the following:

1. Improper form or size.
2. Poor design for the loads to be supported.
3. Poor footings and foundation soil.
4. Contraction and expansion of materials used, due to changes of temperature.
5. Corrosion and rust.

The booklet then gives some information regarding the construction of culverts. It presents as an ideal form of clay pipe culvert that which is built with a center of hard burned vitrified clay pipe, encased in concrete. The sewer pipe, in this type of culvert, forms an excellent center about which the concrete is laid, and affords an everlasting protection to the concrete from the scouring and deteriorating action of water containing acids and other foreign chemical matter. On the other hand, with this type of culvert, the concrete acts as a strain reliever for the pipe.

The chief advantages of a clay pipe culvert, as presented in "About Culverts," are: Because of its strength it may be used without reinforcement; its secure joints prevent leakage from undermining the culvert; its glazed surface enables it to carry water more freely than any other material, and it comes to the job already made up, eliminating the troublesome work of inspection.

The booklet also treats of the proper size and design of pipe culverts and contains several articles on culvert construction, illustrated with sectional views, tables and photographs, which have appeared in engineering journals and papers which have been read before engineering societies. The use of vitrified clay pipe for road drainage is also touched upon in an article written by Will P. Blair, secretary of the National Paving Brick Manufacturers' Association. The booklet is brought to a close with some specific instructions to be followed in the construction of clay pipe culverts.

The Sewer Pipe Manufacturers' Association will undoubtedly be glad to send a copy of their very valuable booklet to any of *Brick and Clay Record's* readers who are interested in the subject which it covers.

⁂

Beg Your Pardon!

In the July 31 issue, on page 241, application for the incorporation of the Shepherd Bros. Brick Co. of Columbus, Ohio, was announced. This item should have read Columbus, Ga., instead of Ohio, and we wish to take occasion to correct this mistake.

UNITED STATES PROMISES ABUNDANT CROPS

NOT ONLY are abundant crops promised in a report just issued by the Committee on Statistics and Standards of the Chamber of Commerce of the United States, but it goes on to say a "most encouraging and significant feature of the situation is the general confidence of the business world in the future, the large volume of business, and the generally sustained conduct of commercial activity in the midst of war's alarms and a future which is beyond any man's ken." It declares for some months past the country has been afflicted with alarmists who sent forth dire prophecies as to the likelihood of actual food famine in this nation.

NEVER WAS ANY DANGER SAYS CHAIRMAN DOUGLAS

"Those in touch with fundamental conditions have known all along that there was never any real danger of food shortage so far as the United States is concerned, unless because of a calamitous and unusually unfavorable season," says Archer Wall Douglas, chairman of the National Chamber committee. Mr. Douglas is vice-president of the Simmons Hardware Co., of St. Louis. "The real need was for a far greater than average production, not for ourselves, but for our allies across the water.

"Fortunately, however, it is an ill wind which blows nobody good, so this unfounded apprehension had at least the effect of stimulating production, especially in garden truck, and moreover there was presented to the farmers an unusual incentive in the form of enlightened self interest, which bore fruit in equally unusual industry, because of abnormally prevailing high prices of all food products. The consequent answer of American agriculture, for our needs as well as those abroad, is the promise of an abundant harvest of food products beyond previous records, as a whole, in our experience.

The total yields of both spring and winter wheat combined will in all probability be greater than the results of 1916, the National Chamber report continues. This is said to be due largely to increased production per acre, which after all is the real measure of crop outputs.

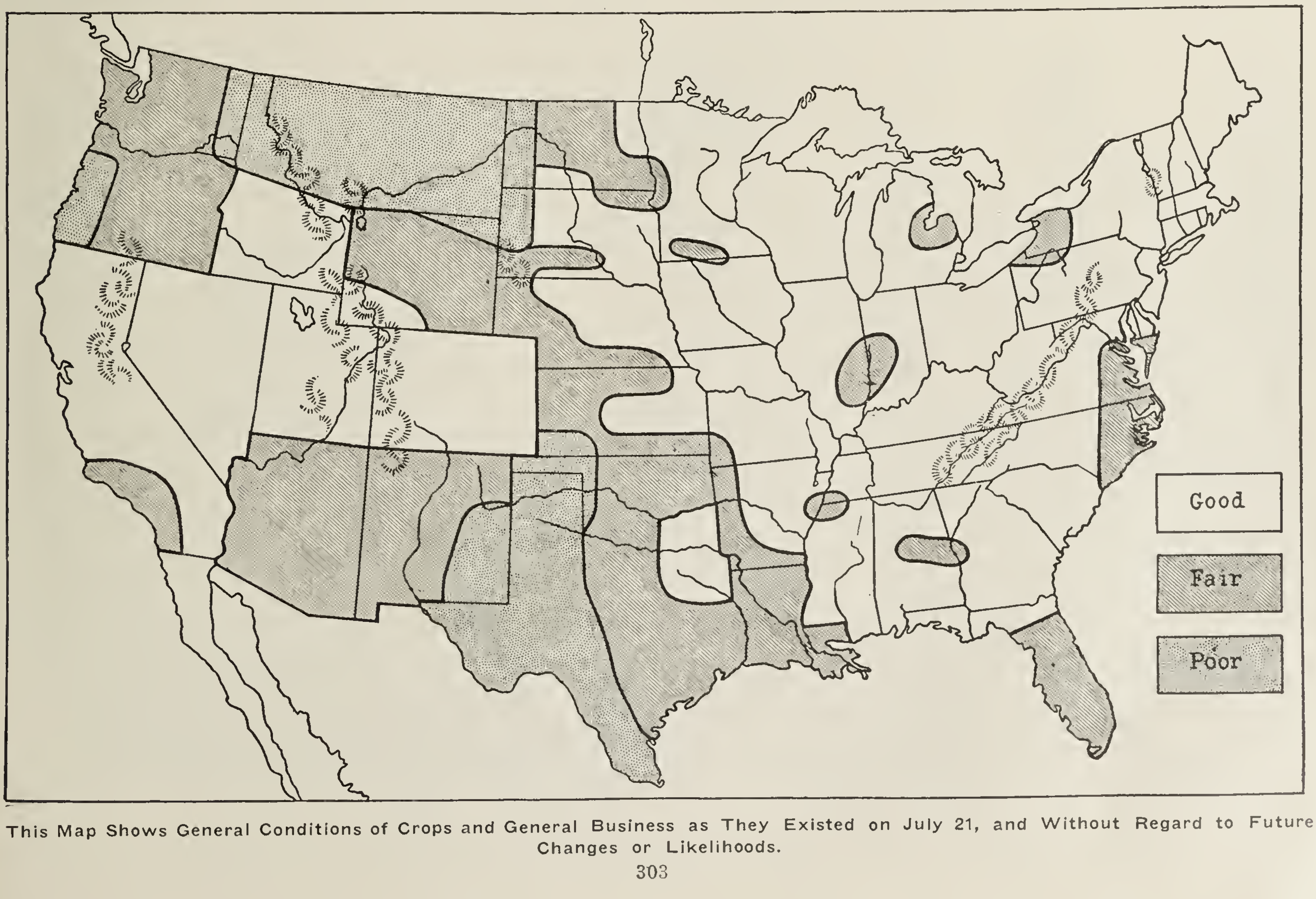
In all sections with the exception of the Pacific Coast the winter wheat is said to have exceeded earlier expectations both as to quality and yield, and many fields that were given up entirely have brought forth bountifully. Spring wheat, starting out under most favorable conditions, has gone somewhat backward owing to prolonged dry weather in the northern portion of North Dakota, westward to the ocean, and in some sections of the Pacific slope. Elsewhere, according to the committee report, it is doing very well and if it be spared the fatal blight of black rust which in August last year wrought such incalculable damage, it promises a yield of one hundred and twenty-five to one hundred and fifty million bushels more than last year.

INCREASED CORN PRODUCTION

The outlook for a record-breaking corn crop is unusually good just at this moment, according to the report, tho there are possibilities which may somewhat reduce the enormous expected yield.

"In many cases, owing to the late spring, cotton was plowed up and corn planted in its stead," says the report. "For several years the South has been raising about thirty-five per cent. of all the corn grown in the country, and bids fair this season to increase that proportion. If corn fulfills its present wonderful promise of an unexampled yield, it will be due very largely to unceasing industry and intelligent cultivation by the American farmer. There was never a crop handled with greater and more watchful care. Its growth and yield this year is the best answer to that constantly unfounded statement as to the superiority of the European

(Continued on Page 331.)



This Map Shows General Conditions of Crops and General Business as They Existed on July 21, and Without Regard to Future Changes or Likelihoods.

ANALYSIS *of* SALES PLAYS *a* NEW ROLE

Miss Lane, the Stenographer and All 'Round Assistant in His Department, Was Merrily Plugging Away at a Computing Machine, Working Up the Analysis for One of the Other Plants.

It Leads to the Discovery of an Expensive Error and Serves to Put the Sales Department on Its Guard

By G. W. Greenwood

Secretary, United Fire Brick Company,
Uniontown, Pa.

BARNES was meditatively running his fingers thru his hair and inspecting the Analysis of Sales for the Bennett plant, which showed the base selling prices of the different classes of brick and shapes at the plant after deducting all freight charges, and was comparing the price of each class with the corresponding price for the previous months.

Miss Lane, the stenographer and all 'round assistant in his department, was merrily plugging away at a computing machine, working up the analysis for one of the other plants.

"How do you like the new form of reports, Miss Lane?" inquired Barnes, looking up from the one he was studying.

"Really, Mr. Barnes, I find them decidedly interesting. So much more so than the old method when we used to dump everything together, all scattered out in a heap. Now it's like one of those jig saw puzzles that used to be so popular. I like to sort each sale, distribute its items according to classes, and to see if the assembled nine-inch equivalent, estimated weights, invoice and freight deductions, all tie up with the total of each for the month, so as to make sure I haven't lost anything in the shuffle."

THE SALES DEPARTMENT SPEAKS

"Here is one more convert to the Barnes Method of Sales Dissection," remarked Baldwin, who had ambled in, with a telescopic movement of his head and shoulders as he came thru the doorway. "I have concluded that it's one thing to know what one's quotations are and another very different story to tell whether or not those prices are being obtained. My hat's off to Barnes."

"In other words, the sales department was like the master of a ship setting the course, but without any observations to determine whether or not the course had been followed," suggested Barnes.

"That would be salesmanship," remarked Miss Lane, smilingly.

"It might be a ship run by sales," admitted Baldwin, "but now we have a steamer which will sell—I mean sail—in calm weather!"

"And as Miss Lane makes the observations, we ought to esteem her for it," rejoined Barnes.

"Here, here," objected Baldwin, "you're getting entirely too bright. I'll bet your mother calls you her little sun. And, by the way, isn't it the sun from which your mate makes calculations?" with a sly look at Miss Lane. Then, tactfully ignoring Barnes' embarrassment, he continued, "What I came in for was to see why the base selling prices of ground fire clay and silica cement in these new fangled reports of yours jump up and down so."

Unhinging himself and folding up so as to get into the region of the desk, Baldwin ran his finger along the line in the Analysis of Sales which showed these fluctuations.

"Sure. That's easy. Some months all this material is sold in bulk, and some months all in sacks, resulting in a higher base price. See?"

"How would it do to handle each of these separately in the report—the bulk and the sacked?" asked Miss Lane.

"Good work," agreed Baldwin. "That will stop these acrobatic stunts."

FACTS AND FIGURES CONFLICT

"Just while we are on this subject," continued Miss Lane, "tell me this: Why was the Retort Brand the only one which sold for a lower base price last month than the month before, all the other brands and classes having gone up?"

"It didn't," declared Baldwin, emphatically. "It went up the same as all the rest."

"Then look at this sheet which I have just finished,' said she, laying before them a tabulated statement.

Table I. RETORT BRAND

Sale No.	9″ Equivalent	Estimated Weight	Freight Rate		Amount of Sale
1086	12 150	85 000	$3.27		$625.00
1117	9 240	64 000	4.12		502.00
1252	16 130	112 900	3.27		825.50
1260	8 140	57 000	3.27		420.00
1312	8 280	58 000	5.18		480.00
1323	11 800	82 000	3.27		403.75
1360	9 700	68 000	5.18		560.75
1401	10 500	73 000	4.12		575.00
1440	8 300	58 000	3.27		425.25
1489	6 200	43 500	4.12		340.00
	100 440	701 400			$5,157.25
		394 900	$3.27	$645.66	
		180 500	4.12	371.83	
		126 000	5.18	326.34	1,343.83
Net Amount after deducting freight					$3,813.42
Base selling price per M, nine-inch equivalent					37.97

"There's a screw loose somewhere," objected Baldwin, pulling himself up to his full six feet six inches. "I know the selling price of Retort Brand went up last month, whatever your table may show."

GETTING THE BASE SELLING PRICES

"Then if when the selling price goes up, the base price goes down, we had better call it Retro Grade instead of Retort Grade," Barnes remarked, grinning. "However, since we've struck something exciting, let's follow it to the end. Instead of bunching the freight deductions, we will figure each by its lonesome, and get the base selling price of each sale. You plug the machine, Miss Lane, and I will put down the results. Ready? 'Sale 1086, 85,000 pounds at $3.27 per net ton."

"One Hundred Thirty-eight Dollars Ninety-seven and one-half cents," Miss Lane read from off the dials.

And proceeding thus, Barnes produced the following results:

Table II. RETORT BRAND

Sale No.	9″ Equivalent	Amount of Sale	Estimated Freight	Net Amount
1086	12 150	$625.00	$138.98	$486.02
1117	9 240	502.00	131.84	370.16
1252	16 130	825.50	184.59	640.91
1260	8 140	420.00	93.19	326.81
1312	8 280	480.00	150.22	329.78
1323	11 800	403.75	134.07	269.68
1360	9 700	560.75	176.12	384.63
1401	10 500	575.00	150.38	424.62
1440	8 300	425.25	94.83	330.42
1489	6 200	340.00	89.61	250.39
	100 440	$5,157.25	$1,343.83	$3,813.42

"Looks to me like a whole lot of work without getting anywhere," dryly remarked Baldwin. "So far as I can see, you have just the same set of totals you had before."

"Just a few minutes more and we'll see what we'll see," calmly remarked Barnes. "Ready for another round, Miss Lane? Divide $486.02 by 12,150 and get the base price per thousand for the first sale in the list."

"Forty dollars, just as near as you can get it," responded Miss Lane.

Continuing to divide the net selling price by the corresponding nine-inch equivalent, they arrived at the following base prices per thousand:

"No Wonder," Said Miss Lane. "Just Look at Its Number, Thirteen Twenty-three! But What Has Happened to Mr. Baldwin? Why Did He Disappear?" But Baldwin was Already Back in the Room With the Records Covering Sale 1323 in His Hands.

Sale No.	Base price per M.
1086	$40.00
1117	40.06
1252	39.73
1260	40.15
1312	39.83
1323	22.85
1360	39.65
1401	40.44
1440	39.81
1489	40.39

"There's the culprit," triumphantly ejaculated Barnes. "That base price of $22.81 per thousand drags down the other base prices."

"No wonder," said Miss Lane; "Just look at its number, thirteen twenty-three! But what ever has happened to Mr. Baldwin? Why did he disappear?"

But Baldwin was already back in the room with the records covering sale 1323 in his hands. "Here's your sale: 475 Retort Brand No. 74 blocks at 85 cents each on a $3.27 freight rate. If that isn't a better base price than $22.81, I'll eat it."

"Eat what? The sale or the No. 74 block?" asked Barnes.

"Both."

"Well, 475. Retort Brand No. 74 blocks at 85 cents each brings $493.75, all right," interjected Miss Lane, who was studying the sale carefully. "But the trouble is that the number of pieces covered by this sale totals up 745 instead of 475. The figures in the total are transposed."

"Blessed if it doesn't add 745," Barnes confessed. "Let's see. At 85 cents each, 745 pieces gives $633.25. Deducting the $134.07 estimated freight gives $499.18 as the net selling price, and dividing by the nine-inch equivalent, 11,800, gives a base of $42.30 per thousand. This will make a raft of difference in the general result."

"Brings the general average up to $40.25," said Miss Lane, who had computed the effect of the change on the general average.

"All I can say is that you accountants are a bright bunch. I'm glad it wasn't one of us," said Baldwin, with a secret feeling of relief.

Barnes said not a word, but quietly pointed to the corner of the sale where the prices, computations and footings had all been approved by the sales department.

"I'll take it all back and declare I didn't say it," apologized Baldwin. "I wonder how many such expensive errors have escaped us in the past before you put this drag-net into operation?"

"I wonder," echoed Barnes.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

The Fourth of a Series of Articles Designed to Help the Budding Traffic Manager

By Sydney A. Hale

SYNOPSIS—Freight rates directly affect the cost of every article purchased or sold. Regulation of interstate transportation charges and service is under the control of the Interstate Commerce Commission. The law which gives that body its powers guarantees to every shipper, irrespective of size, equality of opportunity. Under that statute, rates to be lawful must be just and reasonable and neither unduly discriminatory nor unduly preferential. The basis for all rate-making is the classification. The chief factors that enter into freight classifications and how knowledge of classification requirements paves the way to reduced transportation expenses are the subjects of the present article.

CLASSIFICATION is a rate-making scheme, devised for the purpose of according the same rate to all commodities of a like character from a transportation standpoint. Among the transportation characteristics to be considered in allocating or classifying any commodity are bulk, weight, value, volume of tonnage accruing to the carrier from the commodity, risk, liability to damage, cost of carriage, care in handling, adaptability to movement in carload lots and controlling conditions caused by competition.—Hires Condensed Milk Co. v. Pennsylvania Railroad, 38 I. C. C., 441.

BASES CONTROLLING CLASSIFICATION OF FREIGHT

In determining in what class a certain article should be placed, several factors are taken into consideration by the classification committees. Bulk vs. weight is one of the most important. The earning power of a car is governed by the revenue from the freight which it hauls. Freight charges are assessed upon a weight basis. The committees, therefore, give great attention to the loading possibilities of different commodities. A light, bulky article, taking up considerable space in the car, will not ordinarily be given as low a rating as a compact, heavy one. The cubic capacity of the freight car is fixed. If the cubic contents in one case weigh 40,000 pounds and in another 10,000 pounds, the lighter weight carload may fairly be rated higher than the 40,000 pounds, altho hardly in inverse ratio to the respective weights.

Inasmuch as a railroad is responsible for the safety of the goods it carries, the value of such goods, as a measure of its insurance risk, must also enter into the classification calculations. Value as an index to the transportation tax that a commodity may bear and in comparison to other articles of the same general or competitive type must also be considered. Of greater importance than the insurance risk, from the standpoint of loss, is the susceptibility of the goods to damage in transit. An article worth $10, which will stand rough handling, is a more desirable transportation risk than an article valued at $5, which is very fragile. Finally, as a feature of the risk question must be considered the factor of damage to other articles transported. To use an extreme case: a carboy of acid might break in transit and damage a case of silks in the same car. While the value of the acid itself might be small, its power to cause loss to other articles would be great.

PACKING AND ITS RELATION TO RISK

The manner in which an article is packed for transportation is another important element in transportation. Packing has a direct bearing upon the factor of risk, maximum utilization of car space, and ease of handling. This last is entitled to careful consideration, because the railroad is generally required to load and unload less-than-carload shipments of package freight. Carriers are permitted to reject absolutely, if they so desire, goods offered in insecure or otherwise unsafe packages. They penalize by higher ratings articles in safe, but, from transportation standpoint, less desirable package or form.

Articles set up are generally rated higher than the same articles knocked down, because the space taken up is greater and the susceptibility to damage generally increased. For example, Official Classification rates less-than-carload shipments of harrow frames when set up as first class; knocked down, in boxes, bundles or crates, 15 per cent. less than second class. Upon a movement from Albany, N. Y., to Chicago, set up, the harrow frames would pay a rate of 63 cents per hundred pounds; knocked down, and packed as specified, 46.4 cents.

KNOWLEDGE OF REQUIREMENTS SAVES MONEY

As an illustration of the difference in ratings dependent upon the manner of packing, the less-than-carload provisions on sulphate of alumina, as shown in the same classification, may be cited. They are:

In glass or earthenware, packed in barrels or boxes. First class.

In fiber or metal cans or carton, in barrels or boxes. Second class.

In bags or in bulk, in barrels, or boxes. Fourth class.

Take a movement of 10,000 pounds of this commodity from New York to Chicago. The first class rate is 78.8 cents per hundred pounds, or $78.80 for the quantity stated. Under the second packing the shipper would pay a rate of 68.3 cents, or $68.30, while under the third, the charge would be 36.8 cents per hundredweight, or $36.80. In other words, he could ship the same quantity in bags or in bulk, packed in either case in barrels or in boxes, for $42 less than he could ship it in glass or earthenware containers, and for $31.50 less than he would pay if fiber or metal cans were used. The savings possible upon so many items thru the study of proper packing alone justify careful study and investigation by the shipper or receiver of freight.

Having classified the various articles, these groupings are embodied in classifications showing in alphabetical order the articles, ratings, and packing requirements. Where a special rating is made on carload traffic that, too, is shown and the weight a shipment must be to entitle it to be treated as a carload. The classification also contains the general rules of the carriers for handling freight, explanations of the various packing terms, provisions for loading and regulations governing shipments containing articles of various classes. While the three major classifications are the basis for all rates, the classification issues themselves contain no rates. These are taken care of by individual, joint and agency tariffs.

CLASSIFICATION NOT FURNISHED GRATIS

Tariffs are generally furnished gratis by the railroads to interested shippers; classifications are not. A charge of $1.00 per year is made. This charge covers payment for all classifications that may be issued by the committee during that period, and includes all changes made during that time. The changes are carried in issues known as supplements. A change in rating or description made in a supplement supersedes the rating or description as shown in the classification proper and a change in a later supplement likewise supersedes that carried in an earlier one. Changes in tariff rates, rules and regulations are also made by means of supplements. In both cases, the supplements are numbered consecutively and show which issues are in effect and the effective date of each change carried. Readers desiring classifications should make application to the following gentlemen: R. N. Collyer, chairman, Official Classification Committee, 143 Liberty Street, New York, N. Y.; W. R. Powe, chairman, Southern Classification Committee, Grant Building, Atlanta, Ga., and R. C. Fyfe, chairman, Western Classification Committee, Transportation Building, Chicago, Ill.

* * *

Insists Men Should Be Big Enough

There is a certain sales manager in New York City who never interferes with the men on his staff, even by request. His attitude is that if they are not big enough to handle all propositions that come up in their territories they should go somewhere else. Even in cases where big buyers want to get in touch with the "man higher up"—to please their own vanity, if for no other reason—this manager generally stays in the background, after explaining his policy as diplomatically as possible.

In the rare cases in which he does think it worth while to come in direct contact with a big buyer, he always takes the proper salesman with him and lets the latter do the business. The result is that his men rarely leave or get "fired," and his plants are always busy.

* * *

Factory Building in Cleveland Reviving

Manufacturers and dealers in Cleveland report an increased demand for brick. Factory construction, which some feared would continue quiet for some time, following a two-year period of constantly forced construction, has taken another boom and industrial building is becoming more or less general again.

This increase in factory construction coincides almost exactly with the sifting thru of domestic war orders in great quantities. News of these orders is not published or generally known, but in the industrial world are matters of common knowledge. For instance, it is well known that Cleveland motor truck and body manufacturers on the one hand and dockyard interests on the other have been vying in the lumber market in an effort to buy up the available stocks of oak, maple, and other hard woods for which both have had urgent use, this being for the construction of submarine chasers. Specially equipped machine shops have been at work for weeks on parts for aeroplanes, and on top of this comes news that certain Cleveland automobile factories will be given over entirely to the manufacture of aeroplane motors and that this city will be the center of this industry for the period of the war. A half dozen Cleveland knitting mills are turning out an order for $1,500,000 worth of military sweaters and stocking caps. In other words, the Liberty Loan money is pouring back into the channels of trade in large volume and still more factory space is needed.

The same condition has its effect on other construction, according to brick manufacturers. Apartment house work is starting up again after a serious lapse. Business with small contractors in general is picking up. Among the larger buildings for which brick are now being delivered are the plant of the National Malleable Castings Co., requiring 3,000,000 common brick; the Cleveland Hotel, requiring 4,000,000 common brick, and the new Masonic Temple, requiring 500,000 face brick.

* * *

Insurance Man Suggests Co-operation

That there is a very good opportunity for co-operation between the brick and tile interests of the country, or of any particular section, and the fire insurance men is an idea which has been getting a good deal of consideration lately from David Caldwell, of Louisville, who is president of the Fire Underwriters' Association of Kentucky. This is an organization made up of the field men of the state and a large part of its work is in the direction of fire prevention education and propaganda. Inspections of various cities are periodically conducted by committees of the organization, at which efforts are devoted largely to urging building construction of fire-resisting materials.

Mr. Caldwell has expressed the opinion that there are so many points of mutual interest between the clay products manufacturers and his association that there should be an opportunity for each group to further the interests of the other, while promoting its own. In connection with the recent organization of the Kentucky Clay Products Association, Mr. Caldwell expressed much interest in the purpose of the association to give wide publicity to the fire-resisting qualities of clay products and proposes to get in communication with the officers with a view to suggesting co-operation.

* * *

Supplement No. 1 to A. F. B. A. Telegraph Code

The American Face Brick Association, Pittsburgh, Pa., distributed, on August 6, "Supplement No. 1" to "The A. F. B. A. Telegraph Code." This supplement makes a good many changes and corrections in the original, and, in addition, carries a complete list of code holders who have obtained a copy since the original distribution, which was made early in 1916. In addition to this, there are included many more phrases for use by the traffic department and a very complete list of phrases descriptive of shaped and ornamental face brick.

Receipt cards were enclosed with the supplement, and *Brick and Clay Record* suggests that those in the trade who hold codes and who may not have received this supplement, immediately get into touch with the general offices of the association, as it is understood a charge of twenty-five cents per copy for "Supplement No. 1" will be made for all future requisitions.

* * *

The STATUS *of* CLAYWORKING *in* VENEZUELA

W. W. EWING, a special agent of the Bureau of Foreign and Domestic Commerce, who has just returned from Venezuela where he looked into the markets for construction materials and machinery, has made some interesting statements regarding the brick situation in that country.

"Comparatively few burned brick are used in Venezuela," according to Mr. Ewing. "The construction of the walls up to the present time has been very largely of adobe, unburned brick, or rammed mud walls, reinforced at the corners and around openings with 'mamposteria,' irregular stone and mortar, with wood lintels over the doors and windows.

"The brick made in and around Caracas may be estimated at 30,000 pieces per day. The brick are made partly of a hollow section. Sixty per cent. of the material made by the largest yard in Caracas is of solid section and the remainder hollow section. The quality of the material is inferior, owing to the scant time given for burning the product and the lack of government or municipal requirements. However, in view of the height of the buildings in Caracas (these being rarely over two stories and having the walls completely plastered), the material, as now manufactured, has been of sufficient strength for the structures erected thus far.

"In the whole of Venezuela it is estimated that from 50,000 to 60,000 brick are made per day. The present average price of the most commonly used solid brick is $11.58 per 1,000.

"In the event of any future changes in the designs of masonry structures requiring more resistant brick materials, the brickmakers of Venezuela, by the exercise of greater care in manufacture, should be able to furnish this basic material of proper quality to meet any reasonable requirements."

Taking up the question of sand-lime brick, Mr. Ewing says: "The Compania de Gran Ferrocarril de Venezuela undertook the production of sand-lime brick but because of the lack of complete apparatus necessary for their manufacture, the most satisfactory results were not obtained. Nevertheless, the brick that were made have been used in the construction of some of the stations along the line of the railway, including the Palo Grande station, where the brick were used in combination with red burned brick."

In speaking of fire brick and fire clay, he says: "At New Pueblo, a short distance from Caracas, there is a deposit of fire clay, which has given fairly good results in making a refractory lining for the rotary kiln of one of the companies there. This material is mined in small amounts only.

"Fire brick and clay are imported into Venezuela from Great Britain, the Netherlands (a German product, it is claimed), and the United States. The principal shipments come from Great Britain and the United States. The latter country, during the years 1913, 1914 and 1915, has furnished from 50 to 66 per cent of the refractory material brought into Venezuela. In 1915 important shipments were received from Great Britain, but most of the trade was with the United States.

"The opportunities for increased trade in this material depends on the development of the sugar industry and other industrial enterprises requiring kilns, furnaces and boiler settings."

The LABOR FACTOR *in setting* TERRA COTTA KILNS

Showing the Importance of Choosing the Right Men for Work at a Point That Means Much for Profit or Loss

By Rolf W. Bauhahn

Formerly with the Atlantic Terra Cotta Co.,
Perth Amboy, N. J.

IN EVERY architectural terra cotta plant where an attempt has been made to operate each department on a basis of economy and efficiency the problem of setting the unburnt material is a source of periodic trouble—one which most terra cotta manufacturers have given continued consideration. Few, however, seem to have devised a schedule for movement of the material into kilns, as well as a basis of pay for the labor it necessitates, which is absolutely successful.

As far back into history as we can trace man's struggle to master the art of transforming raw materials of the earth into finished products which satisfy the desire of the human mind, we note the effort to prepare clay, and by burning it in kilns, to build up palaces, tombs, and shrines. Even among the earliest races kilns were used, as the accompanying sketch of an excavation from Ninevah would indicate. That there was trouble with labor and the movement of material we may infer from inscriptions and bas-relief excavations showing task masters beating slaves carrying loads of brick into kilns.

The importance of setting in the process of the manufacture of terra cotta today cannot be over-estimated. This is the point at which the preparation of the material ends. Here a transition takes place. The material has undergone all the treatment which human skill can give it, and passes into the realm of the unknown; for the process of burning, and the chemical changes which take place during burning and which govern to so large an extent the success or failure of the entire enterprise, are yet unfathomed. Men can see that certain changes take place, but the reason why is still as unexplained as the mystery of the universe. Since certain results follow under the same conditions, however, men have continually struggled to control the conditions so as to produce uniform results.

FROM THE SPRAY ROOM TO THE KILNS

The size and layout of the plant will determine the method of procedure in kiln setting. Generally the material leaves the spray room on small cars which are pushed to the kiln. The number of pieces on each car varies according to their size. When the car is four feet wide and five feet long, it usually requires from 200 to 250 cars carrying from 1,000 to 1,400 pieces to fill a kiln having a capacity of thirty tons. When the kiln is near the spray room, hand-barrows are often used to transfer the material without using the industrial cars. A small plant usually has this advantage; and the less handling the material requires, the lower the cost of production and the more speedy the process of manufacture.

That Kilns Were Used to Burn Clay Wares in the Earliest Ages Is Shown by This Sketch of an Excavation from Ninevah.

When industrial cars are used the material must be transferred from the cars to the kiln by hand-barrow, or by hands alone, when the size of the pieces permit. During this operation greater care must be exercised, for unskilled labor handles a product which many trained minds and skilled hands have prepared. Negligence here may result in failure to keep the contract date, since it requires from two to three weeks to replace a piece which is destroyed at this point. Thus, the completion of a job at a building may be held up by the absence of a single piece of terra cotta, which had to be remade because of the carelessness of a laborer in setting the kiln.

SETTING THE KILN

The actual placing of the material in the kiln is work which requires care and experience, and demands supervision. The largest quantity possible must be put into the kiln, and in such a way that during the burning the material will not lose its shape. The men start to set a kiln by placing a row of material on the floor in the rear of the kiln, to a height and width of about two feet. At intervals hollow blocks are set upright to carry a floor of slabs each 2 ft. by 2 ft. by 3 in. thick. Then another row of material is placed in front of the first row and also covered with slabs, so that two rows are covered with slabs forming a floor upon which more material and slabs are placed in the same way.

Continuing the operation, a set of stairs is built five or six high until the door of the kiln is reached. The material is set so that each piece is free from the other and free from the slab by means of wads of clay. Some kinds of ware are set in sand instead of wads of clay, and where this is possible, the time and care required for setting the kiln are much less.

When men deal with material it is always necessary to establish a measure of the amount of material handled in order to reward those men for their labor, with proper consideration of the time consumed in the task. This has been one of the fundamental problems of all industry, and in the manufacture of terra cotta it has been a particularly difficult undertaking to establish a satisfactory method of measuring the quantity of material set in a kiln. Terra cotta is a material which varies in size, shape, and weight, hence, no unit is possible of use. During the early days of the development of the clay industry in this country each piece or group of pieces of terra cotta was weighed, but the element of time had not entered into the cost of manufacture and the quantity of material placed into a certain kiln each day was not an important factor. In the modern era, however, when contract prices and delivery dates disturb even the slumber of factory superintendents and foremen, the necessity for devising methods of speed in completion of work has made the old system of weighing the terra cotta obsolete.

When careful investigation made it clear that a mixture of clay used in producing the terra cotta had a uniform weight per square inch, when dry, it became possible to estimate the weight of the material which was set into a kiln. Then the men who made the original drawings for the material also tabulated the weight so that the amount in the kiln could be recorded as it went in. But even tho this seemed to solve the problem for many years, there was still a defect, and in many places it still exists.

AVERAGE WEIGHT PROVES UNSUCCESSFUL BASIS

At first it was deemed that the *average weight* of the pieces which were to appear on a given story of a building would serve as a basis of weight for every piece on that story which was placed in a certain kiln. Thus, a story might have 1,000 pieces of terra cotta, 500 weighing 50 pounds per piece, and 500 weighing 100 pounds per piece, and the average weight of pieces on that story would be 75 pounds. But since the pieces of less weight would be dried and ready for the kiln at an earlier date than the heavier pieces, an evil existed which caused trouble in establishing a basis of pay for work done because the record said a certain number of pieces on a story of a particular average weight were put into a kiln. One gang of men might handle the lighter pieces and receive pay for having put more weight into a kiln than they had. A kiln of thirty tons might then be said, on paper, to contain forty tons and the men be paid accordingly.

And the opposite might also be true, for if the men set the 500 pieces which weighed 100 pounds each, and they were given credit for each piece on its average weight of 75 pounds, the total amount in the kiln might actually be 30 tons, but they would be paid for only 25 tons. This is especially distressing to men when they are paid not by the day or hour they work, but by the number of tons they set into the kiln.

POINTING OUT THE REMEDY

The remedy is simple, and altho a little more clerical work is necessary, it is worth while. When the drawings for a building are made, the weight of each piece before and after burning should be estimated. Then by a proper method of recording what pieces have been set in the kiln, it is easy to compute the weight of the material in the kiln, and the men will be satisfied that they are paid for the work they have done, no more, no less.

The periodic nature of the work in this department of a terra cotta plant is another cause for trouble. It is only in the busiest season that a steady supply of material is ready to be set. In smaller plants the same men who set a kiln may be used for withdrawing the material or for other work; but in the larger plants where several gangs of men are organized for setting and drawing material it is not always possible for men to receive a regular amount of money per week or month. Their average for the year may be good, but men are usually anxious to have a steady income. With the increased study of the psychology of labor and the increasing consideration for the human element in work of all kinds, this objectionable feature of kiln setting in the larger terra cotta plants will be overcome.

Under the old method of remuneration it is evident to an intelligent person that even tho one kiln showed on paper a smaller quantity of material than was actually handled, the next kiln would make up the deficiency, and during the year, if the same gang of men handled the material they would be paid fairly. Theoretically this was a good method, but in practice it worked a hardship on the men, for the same gang of men seldom handled all the material. It was natural that each gang of men should strive to get as many small pieces to set as possible, in the hope that the average weight of these pieces was high.

With the development of the gang under the best working conditions, it will be possible to inspire them with pride in their work, as is the case in the plants of European countries. The attempt of the laborer or workman to make the most of defects in a system under which he works is instinctive. The existence of the defects is merely a reflection upon the competency of industrial management. And as employers and men understand each other better it will be easier to provide continued employment and it will be easier to adjust any variations which the operations necessitate.

CONSIDERING THE TIME ELEMENT

In a large plant another point for consideration in paying men a rate per ton is necessary. It takes more time to convey material three hundred feet than it does to convey it twenty feet. Where there are many kilns it is almost impossible to have them all equally distant from the source of supply. Some day it will be found necessary to establish a separate rate for every kiln in accordance with the time taken to transfer material from source to destination. And some day it will even be necessary to make a calculation of the additional weight of the chemical solution sprayed on each piece of unburned terra cotta.

Today the labor problem affects such work as the setting of kilns probably more than any other kind of work in the process of manufacture of terra cotta; and there are certain features of this problem which, if recognized in time may save trouble in the future. The nature of this work is such that a number of men must co-operate. The success of this co-operation depends upon the selection of the men. Two men must work in the kiln and do the actual setting of the material, two men must convey the material from the cars into the kiln, and one man must furnish the clay wads or sand and prepare the blocks and slabs.

A good leader of such a gang is very essential to the success of the entire operation. If the foreman of the department can secure a good leader he has accomplished much. The leader should be physically fit to lift and handle large, heavy pieces. He should be quick and sure in his actions and powerful enough to exert his influence over the gang and to dictate to them. The co-operation of the men depends to a large extent upon the leader's instinct for order and the elimination of unnecessary actions. His success will be regulated by the selection of the men in his gang.

CHOOSING MEN BY NATIONALITY

The nationality of the men also plays an important part. Industrial leaders will realize more and more that certain nations have yielded distinct types of men who are particularly adapted to special kinds of work. National traits are an important factor in industry. We have seen during the development of manufacture in this country that some men are more inclined to be mechanics than others, and upon close investigation we find men of certain nationalities predominating. Some men are by nature more fit for hard manual labor than others, sometimes due to a previous condition of life.

Thus, the Italians are more suited to the work of kiln setting than others. They are usually strong, because they have lived in a country where an out-door life has hardened them to rough work. The Italians are, further, a creative people. The instinct to build has dominated the nation for centuries since the glory of Rome. They are by nature artistic and therefore exert more care in handling material—an essential consideration when material is unburned.

On the other hand the Poles, Hungarians, and Russians, naturally a destructive and at the same time an inquisitive people, make good men for a gang to draw material from the kilns. They are anxious to tear town, and like to see what has happened inside the kiln, and even tho most of them are not as quick as the Italians they are not too careless to handle the burned material.

It is apparent that once a gang of men has been organized, and a satisfactory system of remuneration has been established, the problem of completing the preparation of the unburned product under human control has been solved, and, provided a reasonable incentive is offered in the form of a bonus or premium on the work, one more bearing for the giant wheels of industry is lubricated.

John B. Rose to Raise Regiment

John B. Rose, of the John B. Rose Co., Roseton, N. Y., has been appointed by Governor Charles S. Whitman to raise a home guard regiment of 1,100 men. The calling away of the National Guard to its training camp has left the water works and bridges in the state unguarded and one or more home guard regiments will be required to take the place of the soldiers formerly stationed at these points. Mr. Rose is now a colonel in the service and his appointment to raise this regiment has resulted from his activities heretofore. As the head of the John B. Rose Co. he is one of the most important factors in the brick industry of New York State. He has been a member of the state senate for a number of terms.

N. Y. LOOKING AHEAD *with* MORE ENTHUSIASM

GENERAL READJUSTMENTS are taking place in all lines affecting realty improvements in which the equipment department, for the moment, is receiving the largest volume of attention from buyers, says The Dow Service Daily Building Reports of New York.

Fear of a possible coal shortage this autumn and winter has resulted in new clauses appearing in many leases providing for heating accommodation, and in some cases actual advances have been levied on apartment rents. To offset this factor in the higher cost of living, New York apartment dwellers have been evincing a disposition to provide their own hot water as appears from the heavy demand for this and other fuel and labor-saving equipment not only in this city, but in other parts of the country. More than a quarter of a million tons of coal are to be saved to landlords in this city alone, say equipment specialists in this city, as a result of this form of readjustment in apartment house management.

Construction as a whole in New York is more anticipatory than actual, but it is apparent that a close study is being made of current supply and prospective demand because parings are being made on prices in many departments. Copper, for instance, dropped back another cent last week and Hudson River common brick fell off to $8.50 a thousand, wholesale. Second-hand brick also shrank back proportionately, but Raritan common brick held firm at $9, nominal, and extra clear cedar shingles went down 10 cents altho other brands advanced 25 cents. Portland cement is not reporting heavy building orders at $2.12, N. Y., but the market is steady and there is a disposition to take forward orders with more freedom.

There are several price advances in effect this week, but it is noticeable in each case that the advances, outside of tin, are made with hesitation and with full consideration to the light demand prevailing just now. The August wholesale lumber list shows a gain of $12 to $15 in white ash. Chestnut has been marked up $2 for 4/4 first and seconds. Cypress is a dollar higher and hemlock is up 50 cents f. o. b. Pennsylvania, base, and West Virginia, base. California redwood, N. Y. clear 8-inch and under, 4/4 is up $1.

IMMEDIATE FUTURE OPTIMISTIC

New York builders as a rule are looking at the immediate future with more enthusiasm, first because there is a growing feeling in that market that just as soon as the general materials market gets down to a level where financiers can have confidence in the reasonable stability of quotations there will be no hesitancy about proceeding with projects.

The building material market as a whole, outside of metals, has struck a soft spot during which intimations have been freely given that once prices are brought down to more acceptable levels construction will move. These readjustments are being made now, according to manufacturers, just as far as items entering into the cost of manufacturing building materials are reduced to them.

There are evidences in the building material and construction field that the basic situation is in strong hands. There is a disposition to believe that powerful influences are co-operating with the steel department in the expectancy that when the time is ripe for a reversion of capital to building construction, which time is said not now far distant, there will have been a uniform correction of conditions effected, including labor, so that there will be no serious restriction to a free building market in this country.

* * *

R. T. Stull Moves On

His many friends were somewhat surprised to receive the announcement that Ray T. Stull severs his connection with the Dunn Wire-Cut Lug Brick Co., of Conneaut, Ohio, effective September 1, to accept an appointment as chief ceramist of the United States Bureau of Mines and superintendent of the Ceramic Experiment Station, to be located at Columbus, Ohio. Mr. Stull is a well known and prominent figure in the clayworking industry, and the best wishes of all go with him in his new work. He has been with the Dunn Wire-Cut Lug Brick Co. as its ceramic engineer since August, 1915, prior to that time having been known as "Professor" Stull of the University of Illinois. Mr. Stull has done some very remarkable work for the industry and is an all round ceramist. Not only is he remembered for his research in glazes, but his accomplishments in the overcoming of lamination and the manufacture of enameled brick are noteworthy.

R. T. Stull.

Fire Damages Pacific Coast Plant

N. Clark & Sons suffered a heavy loss thru the destruction by fire of their four-story factory building at Pacific Avenue and Fourth Street, Alameda, Cal., together with all of the machinery which it housed. A broken oil feed pipe is held responsible for the fire. The plant was of brick exterior, with wooden floors and inner walls. When the oil from the leaking pipe seeped thru the floor to a highly heated kiln below, the flames spread with such rapidity that workers on the upper floors had difficulty in reaching safety. Minor explosions in various parts of the building increased the difficulty of controlling the fire. The loss is estimated by A. V. Clark at $200,000.

The fire did not affect the large terra cotta molding department, kilns, nor the fitting sheds, brick warehouses, etc., and the company is in position to go ahead with terra cotta orders, completing all contracts on hand and accepting new business. It will not be in position to manufacture sewer pipe or partition tile for some months, however, altho the work of reconstructing the plant is to begin immediately.

* * *

Pioneer New York Potter Dies

The pioneer pottery maker of New York State, Charles W. Coykendall, of 205 Milton Avenue, Syracuse, is dead.

It was soon after the Civil War that Peter Coykendall and his three sons, William, Charles, and Henry, acquired a small plant, consisting of one or two kilns, and a frame building, at what was then the town of Geddes, where W. H. Farrar had manufactured yellow ware, such as flower pots and the like. Here the Coykendalls started making white tableware—an entirely new kind of enterprise in Syracuse and one from which an industry took birth that has made Syracuse known thruout the world.

The industry, which was then known as the Empire Pottery, was continued for several years and formed the nucleus of the present extensive business of the Onondaga Pottery Co. That corporation was formed in 1871 by men who had taken over the small pottery from Coykendall and his sons. Today the Onondaga Pottery employs about 700 people, and an extension soon to be made will greatly increase this number.

Peter Coykendall died in Virginia in 1879 and William died about twenty years ago. Henry, of 116 Merriman Avenue, Syracuse, is the last survivor. He says that the old Empire Pottery occupied the exact site that is now taken up by the buildings of the Onondaga Pottery Co.

* * *

McCann of Streator Resigns

James S. McCann, on the draft list for first call and with an application in for a place in the next camp of the officers reserve corps, has resigned as superintendent of the large new plant of the Streator (Ill.) Clay Manufacturing Co., and is now at his home at Junction City, Ohio, where his mother lies dangerously ill. Mr. McCann will remain at Junction City until called for duty. With a university training, including military maneuvers, considerable experience in handling men, and a general knowledge of engineering, Mr. McCann stands a very good chance of winning a place in the new camp to be started at Fort Sheridan, Ill. Before his departure, Mr. McCann was presented with a handsome open faced gold military wrist watch by the men at the plant, with whom Mr. McCann was very popular.

A Part of the New Three-Mile Stretch of Brick Pavement Laid on

the Lincoln Highway East of Sterling Early in Nineteen-Sixteen.

WEDDED *to* BRICK *for* THIRTY YEARS

The Happy Relationship Between Sterling, Ill., and Its Pavements Precludes the Possibility of Any "Triangle"

ABOUT THIRTY YEARS AGO the now thriving and prosperous city of Sterling, Ill., received a formal introduction to the best of all paving materials, when, after pondering over its merits and considering its costs, the sagacious fathers of the present Sterling generation "signed up" for five blocks of vitrified brick pavement. Over a portion of that same stretch of pavement upon which the early settlers of this enterprising city drove their heavy, slow moving wagons years ago, their sons and countless others now ride in luxurious motor cars and ponderous trucks.

During the thirty years which has elapsed since Sterling laid that initial stretch of brick pavement, its faith in that type of road surface has grown and strengthened to such an extent that it continues to construct its streets and highways with brick, almost to the complete exclusion of all other materials.

It is, as the head of this story states, wedded to brick and each year the relationship between Sterling and its brick highways becomes happier and more profitable. This not only from the standpoint of the traffic of the city itself and that which is drawn into it from the rich and fertile surrounding country, given over chiefly to dairying, but also from the viewpoint of those local boosters who have an eye toward the tens of thousands of cross-country tourists who enter its portals each year in traversing the Lincoln Highway.

Under the Gravel Which the Workmen in the Above Picture Are Levelling Off for the New Semi-Monolithic Brick Road, Lies a Bed of Rock Three Feet Deep Which Served as a Pavement Several Years Ago.

On the Indian Head Trail North of the City, Sterling Is Laying its First Stretch of Semi-Monolithic Brick Pavement, and Is Constructing It from the Money Left Over After Paving Three Miles on the Lincoln Highway.

The Value of the Farm Shown at the Left of this Picture Jumped $50 an Acre When the Brick Pavement Pictured Was Laid.

The Brick Pavement Shown on the Above Streets Has Been in Service for About Ten Years, But is Young in Comparison With Other Sterling Brick Pavements.

A thumb nail sketch of Sterling reveals the fact that it is located in the heart of the beautiful Rock River Valley, just about one hundred and ten miles west of Chicago. It possesses spots of beauty and of historic interest that cause tourists to linger long in its vicinity. Also, it ranks as an important industrial center. Together with Rock Falls, a city just across the river which is usually considered almost as a part of Sterling, it has a population of about thirteen thousand.

Sterling was first settled in 1834, and is the successor to the two rival Rock River settlements of Harrisburg and Chatham. In its infancy, it has aspired to be a great river shipping point and back in the '30's and '40's, considerable money was spent by the state and county governments in clearing a channel thru the rapids at that point. Even now the banks of the old state canal started in 1839 may be seen along the south bank of the river.

As a great future river shipping town the streets leading to the river were all laid out wide and in time were paved with brick as were also those narrow streets which ran parallel with the river. The advent of the railroad, however, together with the completion of the large government hydraulic power dam in 1856, frustrated the early plans of the city, changing the character of its growth and making it strong in manufacturing, besides being the center of one of the richest farming and dairying sections in the world.

THE JUNCTION OF THREE MOTOR TRAILS

What makes the use of brick pavements in Sterling of practical interest is that this city promises to soon become the center of three well marked motor trails, every one of which is backed by an enthusiastic association, and that it also forms the junction point of these trails with the Lincoln Highway, which passes thru it. The trails mentioned are the Indian Head Trail, which traverses the city in a northwesterly direction and which runs from Peoria, Ill., to Minneapolis, Minn.; the Diamond Trail, which extends north and south and joins the Lincoln Highway just outside of the city limits, and the Black Hawk Trail, which extends out thru Dixon and on to Beloit, Wis., along the Rock River basin.

That Sterling is alive to its advantageous position is proven by the large amount of work which it is doing to cover the arteries of travel as far out from its gates as possible with a surface which will be permanent, whose first cost is its only cost, and which will furnish a welcome relief to the tired motorists and farmers who have been joggling along over unpaved country roads.

The Association of Commerce, whose membership includes all of the prominent men of the city and whose purpose is to promote the civic and commercial welfare of the city, is continually preaching the gospel of better roads, and encouraging their construction not only in Sterling but in the towns lying in the surrounding territory. It employs as its secretary an active and progressive man to whom many years of newspaper work has given the ability to advertise the work which Sterling is doing in paving and other lines in a creditable and fascinating manner.

NOTHING BUT BRICK FOR STERLING

According to the association secretary, M. D. John, "the people of Sterling have long been strong believers in good city streets and country roads and so far have used brick exclusively in improving the main travel thorofares." Six streets leading to country roads have been paved to the city limits with brick and it is expected that the remaining two streets will be so improved. Altogether, the municipalities of Sterling and Rock Falls have a total of fifteen miles of brick pavement.

As it was previously stated, Sterling laid its first stretch of pavement thirty years ago on what is now Third Street, the main thorofare of the town. Today that same pavement is in good condition, but due to the immense amount of excavation work which has been necessitated by installations of sewer mains and other underground work required by the expansion of the town, one side of the street has been torn up and is at present being replaced by a new pavement—brick, of course. The 250,000 brick which were torn up have been sold for building purposes, paying a portion of the cost of the new work.

ADOPTING A BRICK PAVING PROGRAM

Several years ago, the people of Sterling Township realized that the heavy and rapidly increasing automobile traffic was tearing up the gravel roads leading into the city as fast as they were repaired and to eliminate the heavy burden of expense which this work entailed every year, it was decided to replace gravel with brick on the main traveled thorofares which pass thru the city as fast as the city finances would permit.

The brick paving program was started about five years ago by building one-fourth mile of brick roadway at each

(Continued on Page 333.)

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Reducing Loss at Offbearing Belt

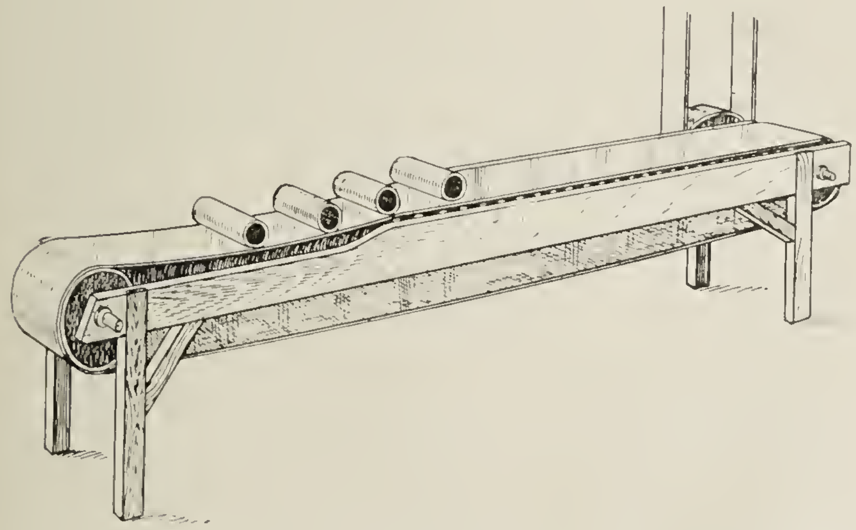
In making wire-cut brick an extra odd size piece is usually made at each cut, which is allowed to run the length of the belt and ultimately finds its way back to the pug mill again. Very often this piece does not separate from the standard size brick neighboring it when pushed onto the offbearing belt and, as a result, the hackers find difficulty in picking off the standard brick to which this odd size brick is attached. Frequently the hacker will drop the brick and hence do work with no results, or else he leaves the brick pass on over the end of the belt. Since there are twelve, more or less, cuts made per minute on a cutter the number of these small pieces that are cut each day amount to a considerable quantity. We know of no means of preventing these odd size pieces from being cut but the number of brick lost because of them can be reduced by ridding the offbearing belt of the small brick before they reach the hacker.

In plants having a large capacity, a man is usually stationed at the cutter to replace the broken wires and to oil and take care of the brickmaking machinery. Generally these duties do not keep him busy all the time. If he would throw off these odd brick during his spare time, he would not only increase the plant efficiency but would also make the day seem shorter to him.

* * *

A Cushion for Drain Tile

A very unique off-bearing table for drain tile is illustrated in the accompanying drawing which shows a table used on an Illinois drain tile and hollow ware plant. The capacity of this factory is too large for one man to pick the tile off as they come from the cutter and so an extra table is used which is placed parallel to the cutting machine and one man is employed to make the transfer, while two hackers are used to load the dryer cars with the ware as it comes from the cutter.



By Cutting Away the Sides and Removing the Rollers from the Offbearing Table, the Danger of Misshaping the Tile Which Are Transferred to It Is Eliminated. The Cutting Machine Runs Parallel With the Table at the Left While the Tracks Run Alongside Its Right.

In making the transfer the danger of crushing or misshaping the plastic tile is eliminated by removing the rollers over which the belt travels from that part of the table where the tile are laid upon the belt and by cutting down the sides of the table. This allows a sag of one or two inches in the belt and when the tile are placed upon it, they receive no shock nor jar from the hard rollers and consequently maintain their shape if handled carefully. The sag is not sufficient to cause any trouble to be experienced by the tile rolling backward when passing to that part of the table containing the rollers.

* * *

Using Old Boiler Tubes on Dryers

What do you do with your old boiler tubes after they have passed the state of usefulness in your boilers? One very good use for them is as guides for the counterweights on the vertical sliding doors of the dryer. The boiler tubes are placed along the end walls of the dryer so that they are situated at the end of the tunnels, between the doors. The movement of the door up and down is guided by channel irons and by the use of the boiler tubes that of the counter weights is restricted to within the tubes. Should the gases, atmosphere, or wear cause the rope attached to the counter weights to break, the weight will fall to the bottom of the tube, thus preventing what might be a serious accident to workmen laboring about the dryer.

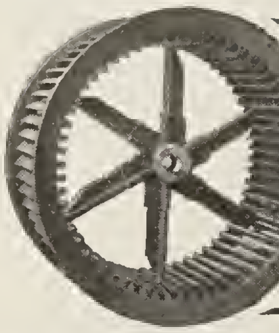
* * *

Keeping Track of Tools

For the small plant where it hardly pays to have a toolroom keeper, a system may be used whereby a check is had on each tool taken out of the toolroom. Every clay plant man knows what it is to hunt in vain for a missing tool. He goes from man to man about the plant and wastes a lot of precious time as well as some good humor before locating the object of his quest.

This difficulty can be overcome to a large extent by using the following very simple system in connection with the toolroom, which has been found of great value by at least one plant. Wherever possible each tool is hung upon the walls of the toolroom and the shape of the tool painted on the wall in black, as tho it were the shadow of the tool when hung in place. On a board in this toolroom is a series of nails on which tags are hung containing the names of every man in the plant. When a workman wants a tool he takes his tag off the board and places it on the nail which held the tool. Then, when another workman wants the same tool and comes to the toolroom he sees at a glance who has it and since in most cases he knows where this party is working he can readily get it. At the same time if the tool is not replaced in its proper position in the toolroom the party responsible for the tool's disappearance is easily found.

Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited



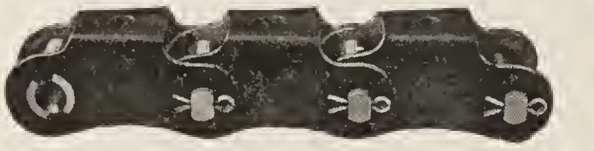
CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo, Michigan, U. S. A.

This Is the Way Your Bearings Look →

To secure it you simply place a graphite sheet between the mandrel and the bearing box and pour in the babbitt. The result is a babbitt bearing impregnated with graphite spots. These bearings last from two to ten times as long on severe work.

Randall Graphite Sheet Lubricator Co., 816 W. Lake St., Chicago, Ill.

UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket



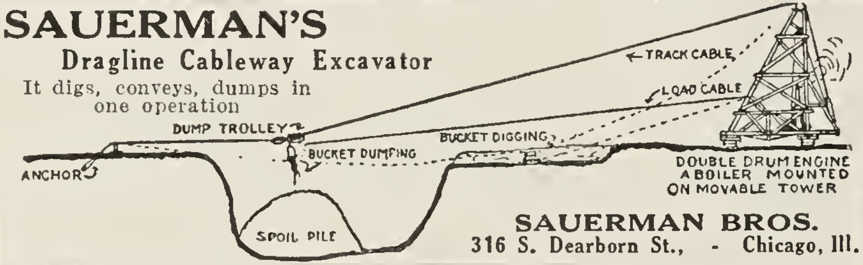
"The Chain of Double Life"

Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used. Sprockets, Buckets, Elevators, etc.—Send for Catalog

THE UNION CHAIN & MFG. CO., SEVILLE, OHIO

DO YOU NEED MONEY?
We Specialize in Bonds on Clay Properties.
We Arrange for Their Issuance and Sale.
We have rendered aid to many clay product manufacturers desiring to expand and improve their properties.
Write Us—Perhaps We Can Help You
F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILL.

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.

"SCANDINAVIA"
(Solid Woven Cotton Belt)
TRULY THE BRICKMAN'S BEST BELT
Scandinavia Belting Co.
106-108 Reade Street, New York
Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.
Canada: Federal Engineering Co., Limited, Toronto and Montreal.

TO STOP advertising to save money is like stopping a clock to save time.
—The Little News.

Mandrels Are Not Always Necessary

I have often ridiculed the idea of using a special mandrel for babbitting bearings, and in most instances I am still against such practice, because in my experience I have never had a failure by using the shaft itself as a mandrel and pouring the babbitt directly around the shaft. In general, the way to do it properly is to do it quickly. Take all the time you want for preparing the molds, and prepare them in such a way that the babbitt can be poured almost instantly. By pouring quickly all sides of the shaft are heated simultaneously, expansion is the same all over, and there is no spring in one direction. The danger that must be overcome is the danger of warping, which will occur when the babbitt is poured slowly and on one spot on the shaft. That spot becomes highly heated, expands, and springs the shaft in such a way that the hot spot will be on the convex side. Before the shaft can spring back, the babbitt solidifies and holds the shaft in a bent condition. Sometimes this bend is very slight, so slight that the shaft can be turned any way, due to the clearance allowed, but the bend can be actually "felt" with the hand.

To prepare the shaft for the mold it is a good plan to burn some oily waste and create an oily soot on the shaft. This soot serves a double purpose. It provides the necessary clearance medium, and it is a good insulator against heat. If you have ever had anything to do with boilers, you know how effective soot is as an insulator. If you fear that the soot isn't thick enough, wrap a thickness or more of thin paper around the soot. Then you will have a double insulator. A string tied around the paper further forms oil grooves that are generally of value in a bearing.

Another difficulty that attends the use of a separate mandrel is that the shaft wears with use, whereas the mandrel doesn't wear. That is, if we have a two-inch shaft to begin with, and a two-inch mandrel sawed off the same shaft, we can do a very good babbitting job the first time, because we are absolutely certain that the mandrel is the same size as the shaft. We then grease and lay the mandrel away for future use. But the shaft runs for a year and wears slightly. Then, in bringing the mandrel back into use for rebabbitting the bearings, the finished job may come out too loose.

To avoid this difficulty, first-class millwrights make special wooden mandrels for every important job, modeling the wooden mandrel to the exact size of the metal shaft. It is well enough for manufacturers to use mandrels. I would use them myself if I were a manufacturer. But the millwright should use his own judgment as to whether or not a mandrel is necessary on special jobs or if it would pay to make one.—*W. F. Schaphorst.*

⁂

Banner Clay Works at Edwardsville, Ill., Sold

The plant and equipment of the Banner Clay Works, of Edwardsville, Ill., organized by a number of St. Louisans, has just recently been sold at a receiver's sale. The sale was made to wind up the affairs of the company, which have been in litigation in the Madison County Circuit Court in Edwardsville for nearly three years. The estimated obligations amount to nearly $150,000, including mortgages of $110,000; receiver's certificate, about $15,000, and court costs of approximately $5,000. The plant is located on sixty acres of land west of Edwardsville.

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

E. Hewit Rodgers, secretary-manager of the El Paso (Tex.) Brick Co., has been visiting in San Francisco.

W. W. Morrow, of the Hocking Valley Brick Co., left early in August on a business trip to Detroit and Toledo.

William Hendrickson is now manager of the Hinde Brick & Tile Co., at Sandusky, Ohio, succeeding H. C. Millott.

Charles Frank, one of the sales managers of the Nelsonville Brick Co., of Columbus, Ohio, has just returned from a two weeks' vacation spent on the Lakes.

Thomas Carey, president of the Carey Brick Co., of Chicago, Ill., has turned over a piece of property, formerly known as the Hawthorne Race Track, to the quartermasters department for use as a supply depot.

Howard M. Roberts, for many years a brick manufacturer at Dover, N. H., died at his home in Portsmouth on July 27 at the age of eighty-five years. He was born in Dover and operated a yard at Dover Point for years.

W. C. Koch, of St. Paul, Minn., vice-president of the Twin City Brick Co., has been appointed chairman of the State War Inventions and Research Committee, which has been organized at the request of the National Research Council.

Following the fire which destroyed N. Clark & Sons' sewer pipe and partition tile factory at Alameda, Cal., A. V. Clark tendered his resignation on the draft board of Alameda, stating that the responsibility of rebuilding the plant will take all his time.

California

The Cannon-Phillips Co. has been organized to take over the clay products plant at Ben Ali, in North Sacramento, Cal., and will reopen it in the near future. Brick and tile will be manufactured.

The installation of new machinery at the plant of the Richmond (Cal.) Pressed Brick Co. is being supervised by Charles F. Rice, of Vallejo, who intends to have the plant in operation very shortly. Julian Carey is the owner of the Richmond plant.

The Terra Cotta Products Co. has been incorporated at San Francisco, Cal., with a capital stock of $150,000. The directors are: T. G. Mapel and J. W. Mapel, of Emmaton, Cal.; J. R. Johnson, W. Williams, and A. S. Cohn, of San Francisco.

The California Brick Co. is at present furnishing brick for various Oakland streets—the first paving brick to be laid in that city for several years. The company has one hundred men employed at its plant in Decoto, Cal., which manufactures 50,000 brick a day. New kilns are in the course of erection, which, when finished, will greatly increase the output.

CRESCENT
BELT FASTENERS

Like to find a way to join your belts so they won't break? So you'd never have to look at the joints or touch them?

You can.

Write us for the Belt Man's Chart No. 4. It tells how.

CRESCENT BELT FASTENER CO.
381 Fourth Avenue New York

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.

Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

B. & B. Aerial Tramway Systems

Handle any kind of loose material expeditiously, economically and with absolute safety.

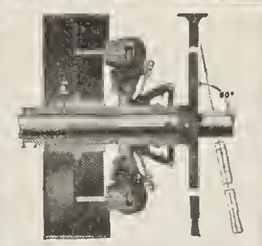
Where the grade is sufficient, gravity supplies all the power, and one or two men can operate an entire tramway.

Ask for Catalog 16 giving detailed information.

Broderick & Bascom Rope Co.
St. Louis, Mo.
New York Seattle

Hill Friction Clutches
Collar Oiling Bearings
and
Complete Power Transmission Machinery Equipments
Catalogs upon Request

The Hill Clutch Co.
Cleveland, Ohio
New York Office. 50 Church Street

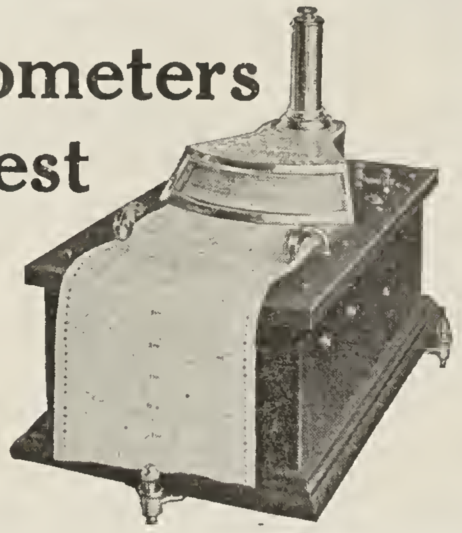


Hill Friction Clutch Pulley Smith Type (Patented)

Price Pyrometers Are Best

Let us prove to you, by the testimony of users, that in economy and efficiency they are unequaled.

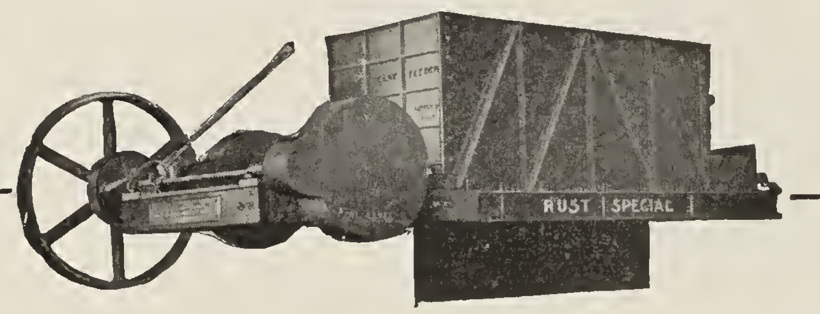
The Price Electric Co.
12367 Euclid Ave.
CLEVELAND, OHIO



The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana



They Drill Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

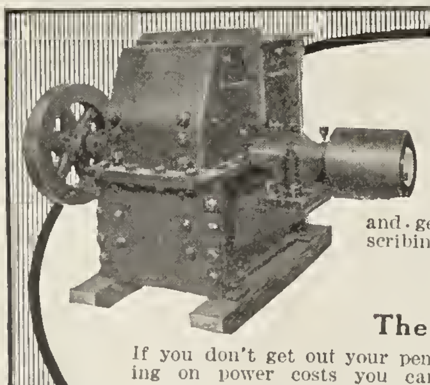
They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. It paid for itself in the first three months; it saves enough powder each year to more than pay for its initial cost."

This is interesting because it is a fact.

Send for Bulletin No. 4.

The Sanderson Cyclone Drill Co.
Orrville, Ohio



Drop us a Line

and get our latest illustrated catalog describing the celebrated

K-B Pulverizer
The All-Steel Hammer Mill

If you don't get out your pencil and do some interesting figuring on power costs you can save, you'll be the exception

Send for book today

K. B. Pulverizer Company, Inc.
86 Worth St., New York

Like most other lines of business, California brick manufacturers and dealers are finding their trade very much affected by the war. While some brick is being delivered and put into buildings on contracts given out some months ago, new work of large size, except where the war and navy departments are either directly or indirectly concerned, is very cars.

The announcement that twenty-eight miles of sewer is to be laid at Camp Fremont, near Palo Alto, Cal., means rush work for Golden State sewer pipe manufacturers. The construction of the cantonment is being rushed and immediate deliveries are demanded on all materials. The order will tax the capacity of the local plants to the fullest extent, especially since the destruction of the Clark factory, and it is doubtful if they can supply the necessary amount of pipe on short notice without the assistance of the southern California and northern sewer pipe plants.

Connecticut

Fire recently destroyed the boiler house at the John Carbo Brick Co.'s plant in Berlin, Conn.

The Bridgewater Brick Co. has been incorporated under the laws of the state of Connecticut with a capital of $50,000 and with headquarters at New Haven by Frank L. Stiles, J. F. Reynolds and Henry F. Redfield.

District of Columbia

Having discontinued business for more than four years, the New Anacostia Brick Co., of Washington, D. C., thru its trustees, has asked the Supreme Court of the District of Columbia to dissolve the corporation. The court is advised that all the stock has been transferred to Richard A. Pyles, one of the trustees, and that the concern is solvent and free from debt.

Idaho

The initial kiln of brick made by the Nezperce (Idaho) Brick & Tile Co. was recently burned with great success. The factory operated by this company has been operating for several weeks and besides the 60,000 brick contained in this kiln, there are in the dry sheds some 125,000 ready for burning. Demand for the company's product is very brisk. Just as soon as sufficient brick has been turned out to supply the present demand, the manufacture of sewer pipe will be undertaken.

Indiana

Connersville, Ind., is on the verge of a house famine, according to newspaper reports from that vicinity. "From neighboring cities one hears and sees in print much complaint of a lag in building activity," says one of the Connersville newspapers, "but if one will take the trouble to look over Connersville, both in the manufacturing and residence sections, he will see that the high prices has not had a tendency to halt building here. The demand for houses is much larger today than it was a year ago."

Kansas

The Metropolis Paving Brick Co. has recently been incorporated at Pittsburg, Kan., with a capital of $200,000. The officers of the new company include M. M. Bushong, president and manager; Roy T. Collins, vice-president; E. D. Tyner, secretary, and Andrew Jaicks, Jr., treasurer.

Kentucky

James T. Howington, manager of the Coral Ridge Clay Products Co., of Louisville, Ky., went to Birmingham to attend a meeting of the directors of the Southern Hollow Tile Association on August 7 and a meeting of the association on the day following. Mr. Howington is president of this association, which is making rapid progress in enrolling the various eligible prospects for membership. At the office of the Coral Ridge Clay Products Co. it was noted that the company is working steadily in an effort to keep up with the orders. A recent good order was booked for shipment to Indianapolis. This company has not been having much difficulty in keeping its force of laborers together. The present force was imported from Georgia in a group and is sticking well.

J. H. Bell, sales manager of the Louisville (Ky.) Fire Brick Co., is due to return from his vacation, most of which he spent in St. Louis. Business continues to come in to this company; orders are not being accepted for definite delivery and are accepted only at whatever time of delivery can be made. The plants are booked up for the rest of this year and are running far ahead into 1918. At the Louisville plant the labor situation has begun to get easier already, which is taken to mean that the army camp operations are getting pretty well along toward completion. In Louisville the company is now receiving and storing coal for the winter. A very satisfactory car supply is noted.

Maine

The Saco (Me.) Brick Co. has suspended operations for the summer as a result of a strike at the plant. The absence of the strikers made the operation of the yard impossible, and altho some later expressed a desire to return at the old wage scale the company decided to close up entirely.

Manitoba

The Reliance Investment & Developing Co., Ltd., are now preparing plans for the erection of a modern clay products plant which will be built adjoining their property in the northwest part of Winnipeg, Man. It is the intention of the company to equip this plant with suitable machinery for the manufacture of high-grade burned clay products such as face brick, sewer pipe, glazed ware and hollow building tile, the importation of which has in the past necessitated the paying of high prices. The plans of the company call for the erection of a fire-proof plant costing approximately $100,000. The capitalization of the company is $500,000, and it has over $250,000 fully paid up capital. The management of this industry is in the hands of A. E. Hilder, one of the most experienced men engaged in the clay products industry in the country and one who has devoted a great deal of his time to the investigation of clays and shales of the province.

Massachusetts

Extensive alterations have been in progress the past fortnight at the yard of the New England Brick Co. in Cambridge, Mass.

Montana

A contract has been let for an addition to the plant of the Great Falls (Mont.) Brick and Tile Co., which, when completed, will have cost in the neighborhood of $100,000.

The contract has been awarded for the construction of a four-story building at the plant of the Great Falls (Mont.) Brick & Tile Co., which will cost approximately $25,000. The main portion of the building will be 80 by 130 feet, while an ell on the structure will measure 40 by

ORIGINAL Boss SYSTEM
COMMON SENSE APPLIED TO
Drying and Burning
ORIGINAL Boss SYSTEM

Boss Ten-Hour Dryer
Would you like to really dry your brick and do it in half less time?

Boss System of Burning Brick
Would you like to improve the quality of your brick and reduce your cost of burning?

Then write for information and we'll SHOW YOU HOW!

JOHN C. BOSS COMPANY
Monger Building - Elkhart, Indiana

"CRIMORA"

That's the MANGANESE you should always use—then you can sell your trade a real specialized brand of brick in

BLACK, SPECKLED OR GREY TONES

Also—you can always depend on CRIMORA MANGANESE DIOXIDE to produce the exact grey-black facings you desire. We can furnish it in any grade or size desired.

Crimora Manganese Corporation
30 East 42d Street New York

SIL-O-CEL PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway
CHICAGO Monadnock Bldg
PITTSBURGH Oliver Bldg
LOS ANGELES Van Nuys Bldg
SAN FRANCISCO Monadnock Bldg

Write nearest Office for Samples and Information

Base Metal Couples and Low Resistance Instruments are absolutely unfitted for use on Clay plants.

We do not and we will not sell that class of equipment for measuring temperatures exceeding red heat.

STUPAKOFF PYROMETERS

for high ranges of temperature are equipped only with rare metal couples and high resistance galvanometers. They are dependable and we guarantee satisfaction.

The Stupakoff Laboratories
Pittsburgh, Pa.

Don't re-handle your brick

It costs **money** and it costs **quality.**
Your entire output can be trucked and placed in the drying shed by one man,
SAVING YOU $104 PER MONTH.
Your brick are better in appearance, because they are not individually re-handled—
Your cost of production is lower, because you eliminate several men—
Your labor conditions are improved, because your trucker has an easy job.
There are three Drymore Systems—one for your plant.

Drymore—
FOR LESS
The Drymore System Galion, Ohio

HETTRICK Red Stitched Canvas BELTING
STICKS — DOESN'T SLIP — LASTS

The best belt for clay plants—regardless of your past experience with other belting, is our **Red Stitched Canvas.**

It resists successfully oil, water, dust and the heavy overloads usually attendant in clay plant work.

Its long life is a matter of favorable comment. For conveyors, elevators and power we will prove that it is best.

THE HETTRICK MFG. CO.
TOLEDO, OHIO

75 feet. The building will be of mill construction and will be completed in about seventy days.

New Hampshire

After being in practically continuous operation every season for more than eighty years, the brick yard at Hooksett, N. H., owned by Colonel Eugene S. Head, has been closed. Colonel Head in explaining the closing of the yard recently said: "Our brick yard at Hooksett is shut down this season for the first time since 1836. It was impossible to get help to run it with any profit, so we were compelled to stop making brick. My grandfather, father and uncle, Governor Natt. Head, and I have kept the plant going all these years until now. The brick yard went thru the Civil War without suspending operations and has met all other crises until the present general scarcity of labor forced the plant to stop running." Whether the yard will resume when conditions become more favorable Colonel Head was not ready to state.

New Jersey

The Empire Fire Brick Corp. has been incorporated at Mountainview, N. J., with a capital stock of $500,000 to manufacture brick, tile and other clay products. The incorporators are Benjamin T. Haines, of Mountainview; George Vittesser and W. H. Schrader, of New York.

A large order received by the Standard Brick Co., of Mountainview, N. J., calls for the manufacture of 1,500,000 brick. Judge Patrick Nolan, of Newark, N. J., and his brother, William B. Nolan, who acts as superintendent of the plant have overhauled the plant and installed new machinery since buying it last winter.

Sheds for the new plant being built at the former site of the Kingsland Brick Co., Kingsland, N. J., are already up. The owner of this plant is Alpheus Krantz, of Paterson, N. J., formerly selling agent for the Kingsland Brick Co., which purchased the property from the New Jersey Brick Co., whose headquarters are in New York City.

W. E. Rivers, part owner and superintendent of the Old Bridge (N. J.) Enamel Brick & Tile Co., died recently at the age of fifty-six years. Mr. Rivers was born in Staffordshire, England, and came to this country when a young man. He has been engaged in the manufacturing of clay products since his initiation into the business world.

A new brick school building costing $375,000 is nearing completion at Ridgewood, N. J. The brick used in its construction were purchased from the Bloomsburg (Pa.) Brick Co., thru its Paterson (N. J.) agent, N. H. Sloan, these numbering 250,000 common and 100,000 rough texture red face brick. A large quantity of hollow partition tile were used in the construction of the walls of the building.

New York

The Albany (N. Y.) Clay Products & Crucible Co., has been incorporated at $1,500 for the manufacture of pottery and tile. The incorporators are Rutherford B. Hayes, Fred C. Parsons and John E. Avery.

On account of the excessive heat during the past week, the brick market in New York, N. Y., has been practically dead, which condition confronted the entire building material industry. Common brick is quoted at $8.25 to $8.75 with scattering loads having sold as low as $8.

Ohio

The Barkwill Farr Co., Cleveland, announces that its general offices will close at noon on Saturday, beginning August 1. This will hold good the year around and not only for the summer months.

Another stretch of brick paving to be added to that already in use in and near Cleveland, Ohio, was contracted for this month when the commissioners of Cuyahoga County closed a contract for the paving of Lee Road, at a cost of $78,000.

Shipping facilities in Ohio have improved wonderfully during the past month, and brick plants are now able to move their shipments with considerable promptness. Orders which have been on the books for some time and shipments held up for want of cars are now being filled.

About the best feature of the brick business in Columbus and central Ohio is the demand for common brick. This is due largely to additions to factories, which are going on rapidly. The common brick market is in good shape and, consequently, prices are firm at $10.50 for soft-mud brick and $11.50 for shale brick.

School work, which had been quite active earlier in the summer, is not as brisk as formerly. There are several jobs yet to be awarded in central Ohio, among which is a grade school for Perry Township, Franklin County, which will be awarded August 30. Another school building for the same county, to be erected at Linworth, Ohio, was awarded just recently.

A merger of the Carlyle Paving Brick Co. and the Portsmouth Paving Brick Co., both of Portsmouth, Ohio, under a new name was recently effected. These plants, which formerly manufactured paving brick, are now making fire brick and have a combined daily capacity of 90,000. The new company will be known as the Carlyle-Labold Co. George E. Carlyle is president; Simon Labold, vice-president; Dan W. Conroy, secretary, and George E. Carlyle, treasurer.

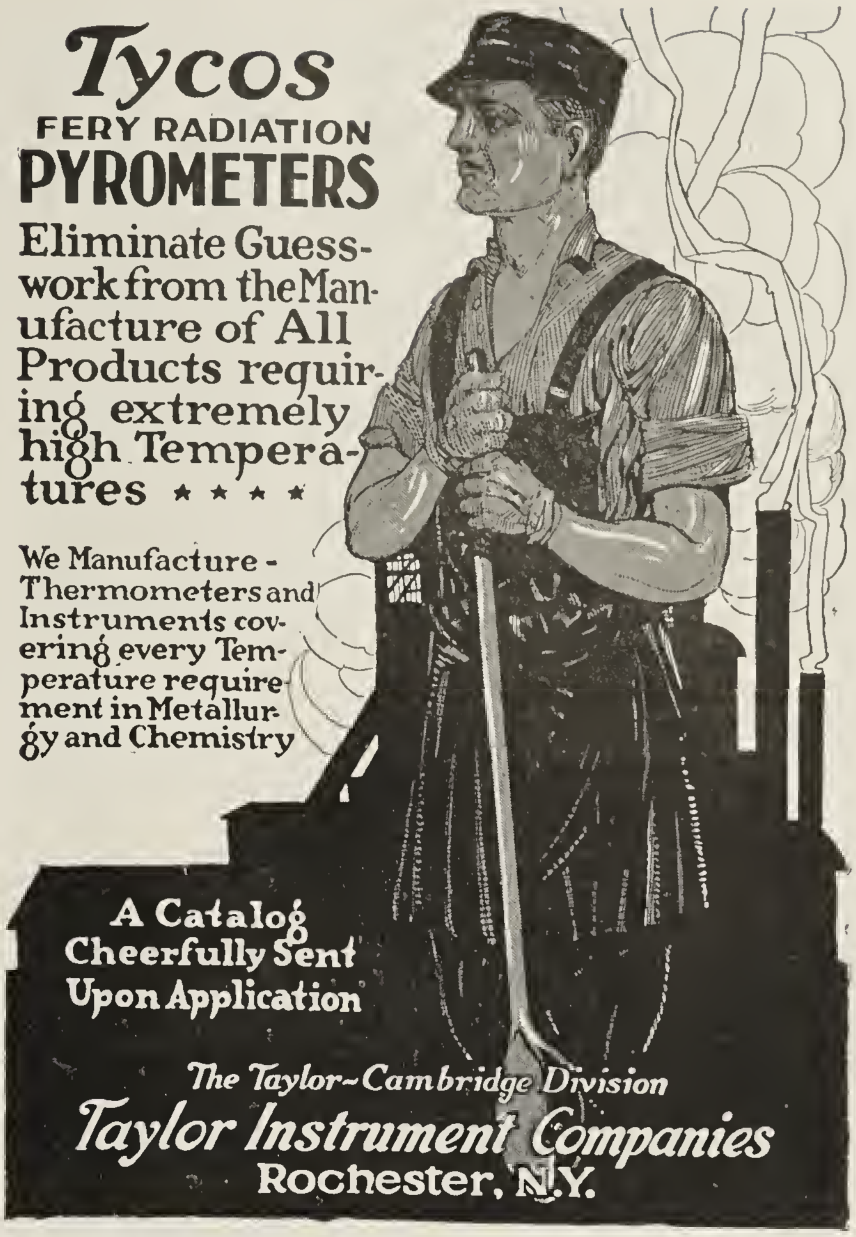
Pennsylvania

The Philadelphia (Pa.) Vitrified Brick Co. has been incorporated by J. T. Hawthorne with a capital of $75,000.

The directors of the Harbison-Walker Refractories Co., at a meeting August 3, declared an extra dividend of 6 per cent. on the common stock of the company, payable August 25 to stockholders of record August 15. The regular quarterly dividend of 1½ per cent. on the common stock was also declared, payable September 1 to stockholders of record August 20. The directors also declared the regular quarterly dividend of 1½ per cent on the preferred stock, payable October 20, to stockholders of record October 10.

Tennessee

In Chattanooga, Tenn., a project which once before was permitted to languish and die is being revived by the city commission. This is nothing less than construction of an extensive system of conduits so that the overhead electric wires that now "adorn" the city may be buried. During a previous administration a movement looking to the same end received a great deal of attention and there was an apparent disposition to pass a bond issue, the city to do the work thru an arrangement with the wire-using companies. Now, Commissioner E. D. Herron is pushing the proposition and it is said that there is a good chance of realizing at least a part of the project.

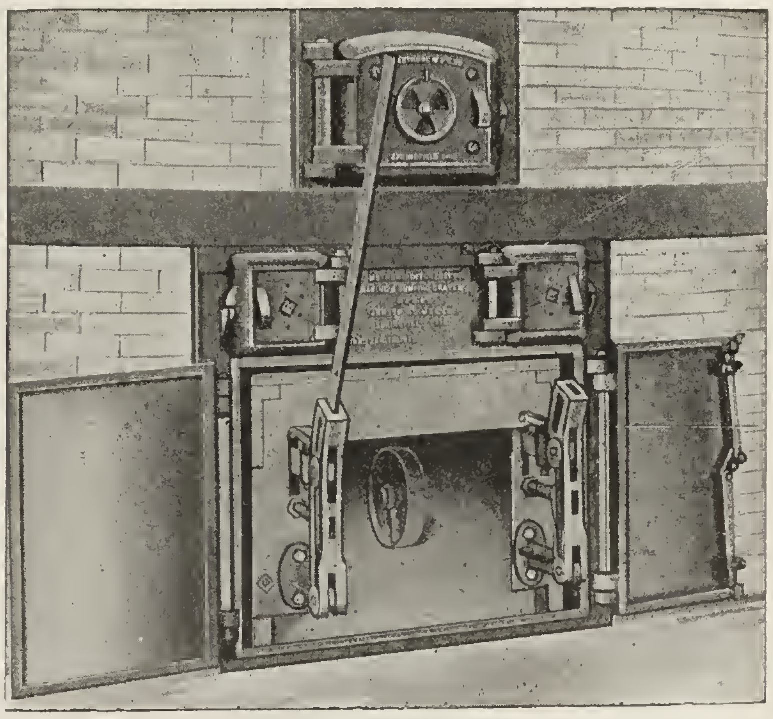


Tycos
FERY RADIATION
PYROMETERS
Eliminate Guess-work from the Manufacture of All Products requiring extremely high Temperatures * * * *

We Manufacture - Thermometers and Instruments covering every Temperature requirement in Metallurgy and Chemistry

A Catalog Cheerfully Sent Upon Application

The Taylor-Cambridge Division
Taylor Instrument Companies
Rochester, N.Y.



Just one movement of the dumping device of the

Standard Interlocking Kiln Grate

entirely cleans the fire—clinkers as thick as six inches are easily handled.

This is only one of many points of superiority that make this the ideal kiln grate for every brick plant.

We install it at our expense—you give it a thoro trial—if it doesn't do all we claim we'll remove it without any cost to you.

Write for details and prices.

The Armstrong Manufacturing Co.
SPRINGFIELD, OHIO

FITTED

To Individual Requirements

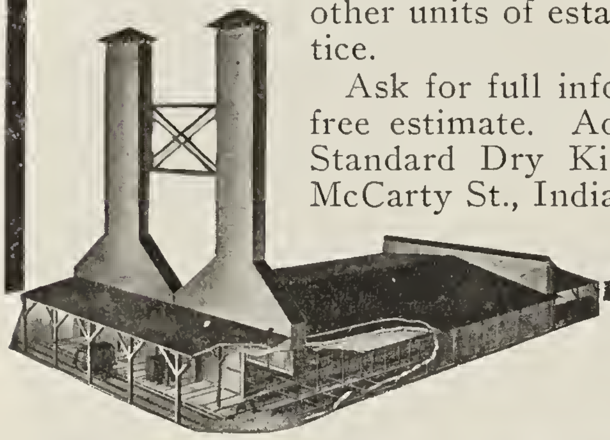
Brick drying apparatus requires individual fitting—to the extent that your clay and steam conditions differ from those at other yards.

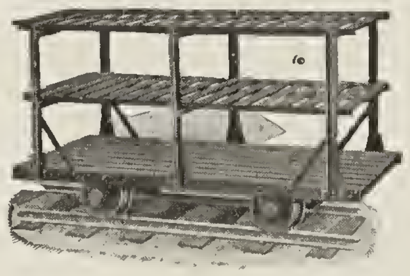
The Standard Drier

offers, among other advantages, that of flexibility of arrangement. This feature permits us, and our 30 years' experience qualifies us, to apply our drying equipment specifically to meet existing conditions.

Re-adjustment of present methods is unnecessary. We design and arrange the drying apparatus so that it dovetails with the other units of established practice.

Ask for full information and free estimate. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.





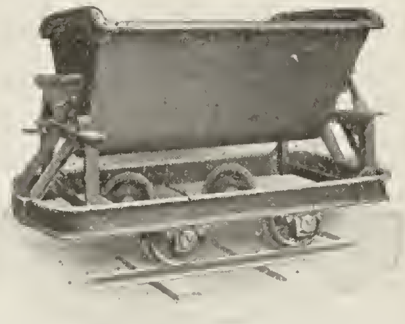
WATT

CARS

"AT FIRST OR AT LAST?"

They stand for efficiency and durability. **Ask for catalogues.**

The Watt Mining Car Wheel Co.
Barnesville, Ohio, U. S. A.



Texas

It has been announced that L. A. Bauer, of Cincinnati, Ohio, C. E. Baudisch, of San Antonio, Texas, and a third party whose name has not been made known, will immediately establish a brick and tile factory, near Brownsville, Texas, the plant to represent an investment of about $50,000, and at which will be employed about forty men at all times. The plant will have a capacity of 100,000 stiff-mud brick and will also manufacture drain tile from four to fourteen inches in size, silo blocks, roofing tile and hollow building tile. Mr. Baudisch will be general superintendent and it is claimed that the concern has already booked many large orders.

Vermont

Sheds covering about a quarter of an acre at the plant of the Drury Brick & Tile Co., at Essex Junction, Vt., were destroyed by fire on July 19. For a time the entire plant was threatened, but valiant work on the part of the volunteer fire department at Essex Junction and the regular department from Burlington prevented the flames reaching other structures. Work at the plant was not interfered with, and the burned sheds will be rebuilt at once.

Washington

Magnesite brick and other magnesite products will be manufactured at the new branch plant at Lacey and Liberty recently acquired by the American Fire Brick Co., of Spokane, Wash., which will probably be ready for operation within a few days, according to the announcement made by President-Manager C. P. Oudin. The plant formerly manufactured burned clay products, chiefly brick. "As soon as we get our new branch ready for work," said Mr. Oudin, "we will start calcining magnesite in making magnesite brick and other magnesite products there so that we may use our main plant at Mica almost exclusively for brick and other refractories. All of the machinery at Lacey and Liberty has been scrapped and it will cost about $25,000 to re-equip the factory and arrange it for our purposes."

West Virginia

The large plant of the Municipal Shale, Block and Brick Co., of Martinsburg, W. Va., was formally opened on August 1, with a flag raising ceremony at which many prominent citizens spoke. A large American flag was unfurled and after the addresses had been made and the ceremony concluded, Miss Mildred Aler, daughter of Vernon Aler, who is to a large extent responsible for the plant being located at Martinsburg, threw in the switch and placed in motion the large 150-horsepower electric motor which drives the brickmaking machinery. Several hundred people witnessed the celebration.

* * *

Prominent New Jersey Clay Miner Dies

Edward Pfeiffer, son of the late John Pfeiffer, and one of the best known clay miners in New Jersey, died July 17 at his home in Metuchen, N. J. He was born in Fords, in 1865, and had been engaged in the clay mining business of Raritan township all his life, having succeeded his father. He is survived by his wife and five children. He is a brother of John Pfeiffer, general manager of Henry Maurer & Son, brick and fire proofing manufacturers of Perth Amboy.

POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

---

BROTHERHOOD PRESENTS DEMANDS TO POTTERS

A general twenty-five per cent. increase in the present wages to all branches of the general ware pottery trade, including china, is asked by the National Brotherhood of Operative Potters in the propositions adopted by the potters at their annual convention, held in Atlantic City during July, and which have been received by Charles F. Goodwin, secretary of the United Potters' Association.

The demands, which consist of twelve propositions relating to various branches of the industry, will be considered later at a joint conference of representatives of the manufacturers and the workmen, at which time a new agreement, to replace the Chalfonte scale, which expires September 30, will be discussed.

The propositions of the brotherhood of this year differ somewhat from those of previous years, in that a general increase to all branches of the trade is asked. Prior to this time the matter of wages for each craft of the industry has been submitted in a separate proposition.

Many radical changes will exist in the new scale if all the demands of brotherhood are adopted. A greater part of the propositions submitted relate to clay workers alone

Copies of the propositions have also been sent out by Mr. Goodwin to all members of the labor committee of the potters' association. The exact date and place of the conference between the brotherhood's committee and the labor committee of the manufacturers have not been determined, altho it is possible that it will be held in Atlantic City during the latter part of the month.

The present agreement between the men and the manufacturers was entered into on October 1, 1915, and does not expire until September 30, 1917. Because of the high cost of living, the manufacturers during the past six months have voluntarily given the men an increase of approximately fifteen per cent. If the twenty-five per cent. wage advance is granted it will mean that the workmen will have secured a forty per cent. advance within less than a year.

The twelve propositions of the brotherhood as announced by officials of the United States Potters' Association are as follows:

1. That sagger clay be prepared by the firm ready for use without cost to the saggermaker.
2. That where sagger machines are installed saggermakers shall be given the preference to work on such machines.
3. That a uniform price of 4½ cents per dozen be established for handling semi-hotel cups.
4. That where any firm requires the handles of casted sugars to be plugged the full pressing price shall be paid for such sugars.
5. That 36's and smaller jugs plugged at lower part of handle, and all covered dishes, casseroles, soup toureens, and similar articles when casted with handles on and plugged, shall be paid for at the stuck-on handle price.
6. That all thin cups averaging less than three-thirty-seconds be classed as extra thin cups and paid for at

Marion

Steam Shovels, Dredges, Draglines and Kindred Machinery

STRIPPING a 17-foot overburden of clay to get to a bank of genuine "Galesburg Shale," and then digging this shale, to be made into its famous 10-pound paving brick, The Purington Paving Brick Company, of Galesburg, Illinois, employ three Marion Shovels.

The oldest of these, a pioneer "Marion" in the field of brickmaking, is still making good in hard stripping, six months in the year. One "Marion"

Loads Shale for 350,000 Bricks a Day—Has Had Two Overhaulings in Ten Years

—and has not been taken from the pit once during the whole time.

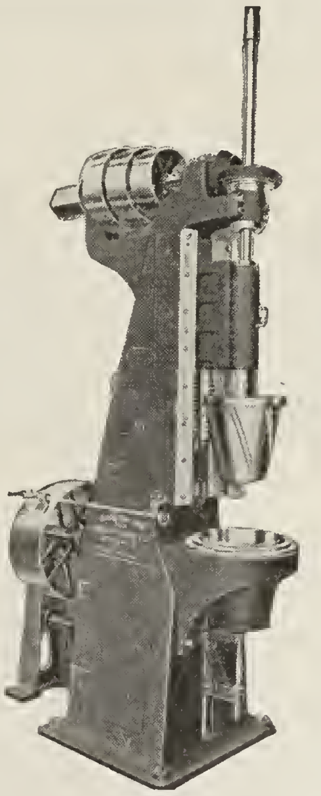
Marion Shovels are honestly designed, honestly built, honestly sold: they do their work with plenty of "reserve power" left over.

We shall be pleased to furnish particulars applying to your special proposition, without obligating you in any way, if furnished the necessary facts.

The Marion Steam Shovel Company, Marion, Ohio

Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle

217 ESTABLISHED 1884



FLOWER POTS

You can manufacture them on most any brick or tile plant as a profitable side line. Send us a sample of your clay. Let's find out if you can do it.

BAIRD MACHINE & MFG. CO.

54-56 Jefferson Avenue Detroit, Michigan

extra thin price for turning and handling, as specified in the wage scale.

7. That a further increase of twenty-five per cent. on present wages be granted to all branches of the general ware trade, including china.

8. That jiggermen be relieved of all dead work, such as carrying out, throwing out old molds, putting in new molds, getting clay, carrying out scraps, etc., the firm to pay all help; the jiggermen to retain foremanship over batterout and mold runner; flat jiggermen shall be paid forty-five per cent., cup jiggermen sixty per cent., and jumbo jiggermen 66⅔ per cent. of the present list prices, plus a twenty-five per cent. increase. When jiggermen are required to work with less than a full crew. or are compelled to work with green or unskilled help, the firm shall make up the jiggerman's average day's wages.

9. That double time be paid for all work done on Sunday, and time and one-half for all work done before or after regular working hours.

10. That all shops be swept each working day, after 6 P. M. and before 5 A. M., at the expense of the firm; that kiln sheds be swept at noon each day in addition to regular sweeping, and that all workshops be swept thoroly once each week with wet or oiled sawdust in conjunction with regular sweeping.

11. That in each shop, employing five or less journeymen, warehousemen shall be entitled to one apprentice, and one additional apprentice for every additional five journeymen employed. No journeymen shall be discharged to make room for an apprentice, and no apprentice at present employed shall be discharged for the purpose of establishing the foregoing ratio.

12. That the day wage rate which now appears in the different branches in the uniform price list be abolished where such branches are covered by a piece work rate.

NEW POTTERY FOR PACIFIC COAST

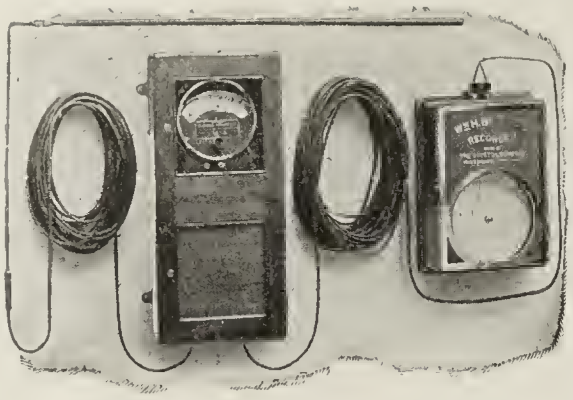
The Porcelain Products Co. is the name of a new concern which has purchased ten acres of land at Torrance, Cal., upon which it will build a $150,000 plant for manufacturing vitrified porcelain ware. The ware will be made by a special casting method and fired in a continuous tunnel kiln. The method of casting will be the same as that employed by Charles J. Kirk, of Newcastle, Pa., at the Universal Sanitary Manufacturing Co.'s plant. The first year's output will be about $1,000,000. The building will be of fireproof construction and all machinery of the latest type. An option has been taken on another ten acres, so that a much larger plant can be constructed if business warrants it. Dr. S. Trude will act as general manager of the new concern.

ENDEAVOR TO END CANADIAN STRIKE

Edward Menge and John T. Wood, president and secretary-treasurer, respectively, of the National Brotherhood of Operative Potters, went to St. Johns, Canada, to confer with the Canadian government officials with a view to settling the strike in the dominion, called about two years ago. The Canadian sanitary workers are affiliated with the National Brotherhood of Operative Potters. None of the sanitary plants in Canada have been operating for the last two years because of labor trouble. The only sanitary plant of any size in the country is the Canadian-Trenton Potteries Co., at St. Johns.

SITUATION IN TRENTON SERIOUS

A general strike of pottery workers in the Trenton (N. J.) district threatens as a result of the action taken by the



TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.
RECORDING PYROMETERS
BRING THE KILN INTO THE OFFICE
—right to the Superintendent's desk, giving him more time to do brain work.
The recorders bring him records in permanent form of the temperatures at the kiln. He can compare today's temperatures with that of yesterday, a month ago, or a year ago.
Down at the kilns an equal number of Bristol Indicating Pyrometers act as a guide for the burners. Team work of this sort eliminates all guess work and the resulting inefficiencies.
Suppose you allow us to show you how you also can increase team work and efficiency by the use of Bristol's Recording Instruments.
Write for Bulletin 163.
THE BRISTOL COMPANY, Waterbury, Conn.
Branch Offices:—Boston, New York, Pittsburgh, Chicago, San Francisco

This Cement Required for Good Furnace and Kiln Construction
It is not a fire clay. It is a Fire Cement that will soften at 2318° Fahrenheit and will stick to firebrick—surface or joint—up to temperatures of 2700° without running. Professor Geo. H. Brown, Dept. of Ceramics, Rutgers College, says:
New England Fire Cement has a low firing and drying shrinkage. It will not tend to crack or flake off when applied to the surface of brick work. "Its mechanical and working properties are very satisfactory."
Line a kiln or two with this cement—try it.
Write your own guarantee, then order
New England Fire Cement Company, Inc.
240 Lisbon St., LEWISTON, MAINE

manufacturers on the wage increase of 25 per cent. asked by the men last spring. On the last day in July the men were notified that they were being granted an increase of 7½ per cent. As this is written the matter is still unsettled and no definite action has been taken. Many of the sanitary potteries are working on government contracts which will keep them busy for several months and a strike at the present time would prove very serious.

Damage to the extent of $3,000 was done to building and stock of the Paducah (Ky.) Pottery Co., on August 2, by a fire which Manager S. T. Howard is inclined to attribute to burglars. The blaze originated in the second story of brick warehouse No. 1, at Seventh and Trimble streets, and the heaviest damage was done to pottery stored there.

Eastern promoters have notified the mayor of Los Angeles, Cal., that they are contemplating the erection of a $250,000 clay products plant. This concern, according to the report, plans to have the largest kilns in the West and will especially direct its attention to trade in South America and the Orient.

R. F. Reed, who for some time has been general manager of the W. S. George Pottery Co., at Canonsburg, Pa., has resigned his position and will leave for East Palestine, Ohio, where he formerly was associated with the W. S. George Pottery Co. as superintendent of their plant No. 1.

The Trenton (N. J.) Potteries Co. has purchased from the Eagle Pottery, at Trenton, the Greenwood China Co. it fronts some 350 feet on one street and 30 feet on another.

* * *

BUSINESS CLASSIFICATION *of* CURRENT LEGAL DECISIONS

IN PUBLISHING "A Business Classification of Current Legal Decisions," *Brick and Clay Record* is not attempting to act as legal advisor for its many readers in all of the difficulties which confront them, altho the service of this new department does include lending assistance to our subscribers in solving problems of a legal nature and, thru our legal expert, answering questions which fall in the same class.

Rather, it is the purpose of this department to serve to the manufacturer of and dealer in clay products a short digest of legal decisions which have been handed down in the courts during the month, and which he can read over in a very few minutes, consequently keeping in close touch with legal developments at the expense of very little time.

If, in reading over the following short paragraphs, each one of which epitomizes a lengthy pronouncement of the courts, an error is detected or an addition to one of the decisions touched upon suggests itself which makes the item especially applicable to the clay products field, *Brick and Clay Record* would be glad to learn of same. Such cooperation would make the new department of more value

VERBAL INSURANCE CONTRACTS VALID

Verbal contracts of insurance are valid.—McQuaid v. Aetna Insurance Co., 115 N. E. (Mass.), 428.

CERTIFYING CHECK

By certifying a check a bank becomes bound as a direct and original promisor to the payee.—Connor v. Bank of Bakersfield, 163 P. (Cal.), 353.

HONORING OVERDRAFT CHECKS

It is not ultra vires for a bank to agree to honor overdraft

YOU WOULD BE SURPRISED
—if you knew the names of even a few of the brick and tile plants using
RINO LUBRICANT

Ask us for the names of some of these; write them yourself and find out what a saving they have effected by protecting the heavy gears of their dry pans, pug mills, augers, crushers, steam shovels, etc.

Ordinary grease is useless for heavy gears, but Rino Lubricant is *not* an ordinary grease; it is a heavy black adhesive compound that serves as a shield on gears. Rino Lubricant eliminates most of the noise and prevents wear, because the metal parts do not actually touch.

Try a Sample—We Absolutely Guarantee Satisfaction.

THE OHIO FILLER & SHIELD CO.
COLUMBUS, OHIO

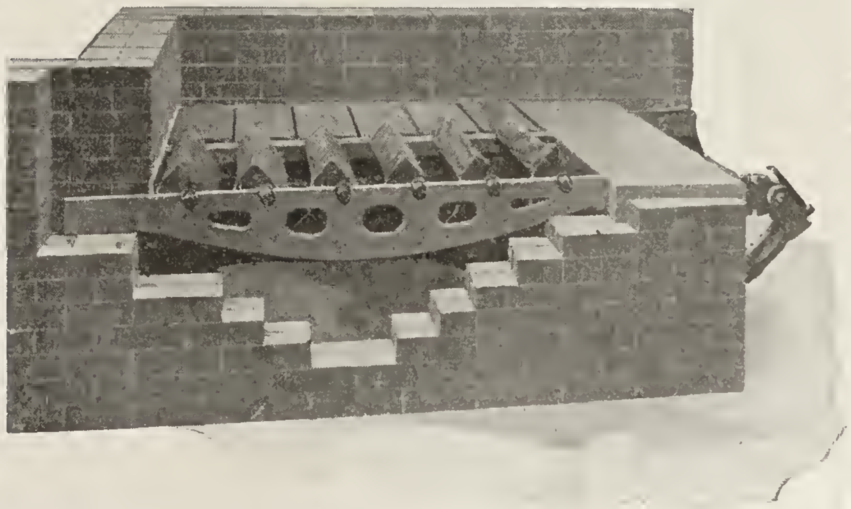
You would say that it was the silliest thing you ever saw
Slant Grate Bars Under The Boiler

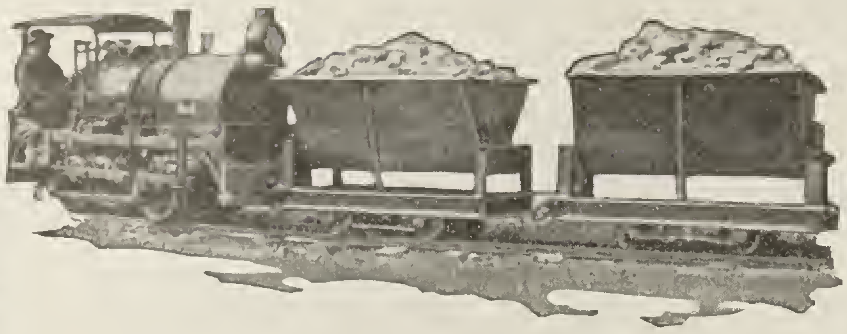
It simply isn't done, it's ridiculous, impossible. Why then do you use them in the kiln furnaces? For, here you burn more fuel, ten times as much, as you do under the boilers. You will be astounded at the savings made by installing

Cyclone Kiln Grates

They burn every bit of the fuel, they are easy to clinker and clean, they burn cheap fuel, are successfully handled by cheap labor, and are perfectly controlled. Can you ask for more?
Get the details of successful use from

The Cyclone Grate-Bar Company
BUFFALO, N. Y.





Discard hand-pushing methods.

Sell your horses and mules—eliminate the barn, the feed, cleaning and veterinary nuisance. Make a bid for results and install the low priced

Bell Steam Locomotive

It Burns Kerosene Costing

9c per gallon, it requires no licensed Engineer, and it pulls a 50% heavier load than any other steam locomotive.

The BELL has a lower first cost and still does more work at a lower operating cost than any other type. Address the

Bell Locomotive Works, Inc.
30 Church Street New York

You can get a higher price for your brick if you guarantee it will be

Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H. —the dependable brand.

Write for circular and prices.

The Roessler & Hasslacher Chemical Company
100 William St. New York

Chicago, Ill. St. Louis, Mo. Philadelphia, Pa.
Cincinnati, O. Kansas City, Mo. Boston, Mass.
Cleveland, O. San Francisco, Cal. New Orleans, La.

We carry a complete line of high grade chemicals for the clay industry

checks for a regular customer.—Saylors v. State Bank of Allen, 163 P. (Kans.), 454.

"SIGNING" A DOCUMENT

To "sign" a document is to affix a signature thereto, to ratify by hand or seal, or to subscribe in one's own handwriting.—In re Manchester's Estate, 163 P. (Cal.), 358.

EXPRESS AND IMPLIED WARRANTY

An express warranty may be either oral or written, while an implied one is never written, but arises from the nature of the transaction.—W. H. Hoopes & Sons v. F. H. Simpson Fruit Co., 161 N. W. (Iowa), 629.

DIRECTOR NOT LIABLE FOR LOSS

A director of a national bank is not an insurer, and is not, therefore, absolutely liable for loss during his inattention, but to render him liable the loss must result from his negligence. —Wallach v. Billings, 115 N. E. (Ill.), 382.

IGNORANCE OF CONTRACT NO DEFENSE

One who signs a contract is presumed to know and understand its terms, and mere failure to read or inform himself of such terms, in absence of fraud, is no defense.—Dening Investment Co. v. Wasson, 192 S. W. (Mo.), 382.

DELIVERY OF SHIPMENT

A carrier is bound to deliver goods intrusted to it for shipment at the place of destination named in the contract, and cannot compel the owner to accept them elsewhere.—Balknap v. Baltimore & Ohio Railroad Co., 91 S. E. (W. Va.), 656.

A "PLEDGE" AND CHATTEL MORTGAGE

A "pledge" differs from a chattel mortgage in that it does not generally pass title in the thing pledged, but gives only a lien to the creditors, while the debtor retails the general property.—People v. Scudder, 163 N. Y. S., 739.

MEASURE OF DAMAGES

The measure of damages for failure of the seller to deliver goods sold is ordinarily the difference between the contract price and the market price or value of the time and place of the delivery.—Workman v. McKinner-Guedry Co., 192 S. W. (Ky.), 684.

AGENT'S COMMISSIONS

Under a contract giving an exclusive agency for the sale of a product on commission within a certain territory, the agent is entitled to commissions on sales within such territory by his principal or another agent.—Gatewood v. New River Consolidated Coal & Coke Co., 239 F. (U. S.), 65.

EXECUTING CONDITIONAL SALE CONTRACTS

Conditional sales contracts, which are valid under the law governing them at their execution, should be enforced as a matter of comity in other jurisdictions where the goods may be taken unless such enforcement is contrary to the policy of the laws of that jurisdiction.—Mergenthaler Linotype v. Hull, 239 F. (U. S.), 26.

BANK NOT LIABLE FOR NEGLIGENCE

A bank receiving commercial paper from a customer to be transmitted for collection is the customer's agent for transmission only, and not liable for negligence of its correspondents or agents, if it used reasonable care in their selection.—Farmers' National Bank of Beaver Falls v. Nelson, 100 A. (Pa.), 136.

DETERMINING MEANING OF STATUTE LANGUAGE

In determining the meaning of a word, clause or sentence appearing in a statute, all the provisions of the act, so far as they may throw any light upon the construction of the particular word, clause, or sentence involved, shall be considered.—Salo v. Pacific Coast Casualty Co., 163 P. (Wash.), 384.

TIME OF NOTE UNCHANGEABLE

The maker or holder of a note cannot change the time of day at which it shall be payable, and at which its maker shall be in default for non-payment by merely delivering it to a bank for collection, nor can the time when motion of dishonor may be given be thus advanced.—Smith v. Hirst, 163 P. (Cal.), 334.

SALE OF NAME

An individual who had sold his business and the use of his name to a corporation can be restrained for thereafter engaging in the same business in that locality under his own name, or by a corporation organized by him with a name similar to that of the corporation to which he had sold his former business.—Wheeler Syndicate, Inc., v. Sheller, 163 N. Y. S., 817.

FORFEITURE OF POLICY

Where fire policy provided that it would be void if the insured thereafter procured any other contract of insurance whether valid or not, the action of the insured in thereafter procuring another policy of insurance on the same property worked a forfeiture of the first policy.—Camden Wholesale Grocery v. National Fire Insurance Co., of Hartford, Conn., 91 S. E. (S. C.), 732.

PARTY TO SUE CARRIER

Where the seller is consignor and consignee, and indorses the bill of lading with drafts on the ostensible purchaser, and the real purchaser pays the draft, and the goods are delivered to him, he is the party beneficially interested and is the proper plaintiff to sue the carrier for injury to goods.—Nashville, Chattanooga & St. Louis Railway v. Abramson-Boone Produce Co., 74 So. (Ala.), 350.

VALIDITY OF CONDITIONAL SALES CONTRACTS

The validity of a conditional sales contract is governed by the law of the place where it was entered into, and where it was executed by a delivery of the goods to a carrier for transportation to the buyer, not by the law of the place where it was contemplated by the parties the goods should be kept, and where in fact they were at the time the rights of subsequent purchasers or creditors arose.—Mergenthaler Linotype Co. v. Hull, 239 F. (U. S.), 26.

CONSPIRACY TO DEFEAT BANKRUPTCY ACT

Defendants may be convicted of a conspiracy to receive the property from a bankrupt after bankruptcy, with intent to defeat the Bankruptcy Act, tho the evidence shows that the property was taken out of the bankrupt's possession two days before the petition in bankruptcy was filed, since the final agreement may not have been made until thereafter, and the property continued to be the property of the bankrupt.—Knoell v. United States, 239 F. (U. S.), 16.

SIGNIFICANCE OF "CHATTEL MORTGAGE"

A "chattel mortgage" is something more than a mere security, being a conditional sale of the thing mortgaged, and transferring legal title to the mortgagee, to be defeated only by full performance of the condition, nothing short of actual payment before a foreclosure or sale being sufficient to revest the legal title in the mortgagor, so that on breach of the condition the mortgagee may, so far as the legal rights of the parties are concerned, treat it as his own.—People v. Scudder, 163 N. Y. S., 729.

For your boiler feed pumps and other pumping requirements, order

Jenkins Bros. Pump Valves

Their use means less slippage, fewer pump repairs, and reduced annual valve expense. Their tightness and durability under heavy duty has earned them a reputation for economy and dependability. They are made in different compositions, each of which is recommended for some particular class of service. The following are a few of our leading compositions:

Jenkins Bros. No. 80—for hot water, temperature above 180 degrees.

Jenkins Bros. No. 93—for hot water, temperature below 180 degrees.

Jenkins Bros. No. 88—for cold water, under high pressures.

Jenkins Bros. No. 94—for cold water, under low pressures.

Always give diameter, thickness and size of hole when ordering. If in doubt as to grade required, specify conditions of service. We can make prompt shipments.

REG. U.S. PAT. OFF. TRADE JENKINS MARK

Jenkins Bros.

80 White Street, New York. 524 Atlantic Avenue, Boston.
133 N. 7th Street, Philadelphia. 300 W Lake Street, Chicago.
Jenkins Bros. Limited, Montreal, Canada, and London, E. C. England.

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.

Cleveland, Ohio

Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

A BRICK STORY

Perhaps it fits your case

Every brick that is bought from your plant to go into another man's wall is whose brick?

YOURS ALWAYS

Your future, the future of your plant, your reputation, is dependent on the action of **that** brick in every wall that you sell.

If it stays always a good brick in color and body, it is a perpetual advertisement beautiful —for you.

But, if it scums, if it shows up grey on a clear deep red, if it assumes in a few months a dirty-yellow-grey-whitish indescribable color, your reputation, your business is hurt.

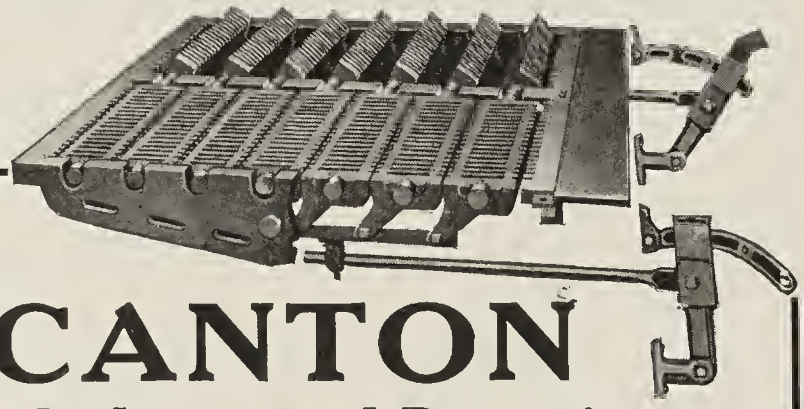
It is your fault—yours alone—a result of carelessness or ignorance, or both, which does not mend matters.

The cure, the preventative absolute of scum is

ROLLIN'S BARIUM CARBONATE

and if you will write us, we will tell you all about it, and how easy and surprisingly cheap is the process applied at your pug mill.

ROLLIN CHEMICAL COMPANY
Inc.
Charleston, West Virginia
General Sales Agents
National Aniline & Chemical Company
244 Madison Ave., New York City



CANTON

Shaking and Dumping

GRATES

Not a TRIAL Nor An EXPERIMENT

When it comes to saving fuel, keeping the fires clean, removing clinkers and ashes easily, these grates have proved their practical utility for many years.

The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

When you want Grates—don't forget to investigate the merits of the Canton Boiler Grate. Write for catalog.

THE CANTON GRATE CO.
1706 Woodland Ave.
CANTON - - - - OHIO

PRESIDENT'S CONTRACTS BINDING

Where the president of a trading or business corporation is given general management and control of its property, he is an agent as to third persons, and the corporation is prima facie bound by contracts made by him, in its name, within the apparent power of the corporation, and third parties entering into such contracts are not bound by secret limitations of his authority, or to inquire whether the act is advantageous or disadvantageous to the corporation.—Aetna Explosives Co., Inc., v. Bassick, 163 N. Y. S., 917.

INSURER NOT SUBJECTED TO LITIGATION RISK

Under an indemnity policy providing that, if suit is brought against assured on account of an accident, the insurer will at its own cost defend the suit unless it shall elect to settle it or pay the insured the indemnity provided by the policy, the election by the insured to defend the suit of the person injured, rather than to settle, does not subject the insurer to the full risk of the litigation, where the judgment recovered exceeds the indemnity provided by the policy.—Kinger & Co. v. Maryland Casualty Co., 115 N. E. (Ind.), 348.

VALID AGAINST CREDITORS

Under Personal Property Laws, New York (Consol. Laws, C. 41), §62, providing that all conditions in a conditional sale contract, accompanied by delivery of goods reserving title in the vendor, shall be void as against subsequent purchasers, pledges, or mortgagees in good faith, unless recorded, an unrecorded conditional sale contract is valid against the creditors of the buyer, so that the trustee in bankruptcy acquires no rights thereto under Bankruptcy Act, July 1, 1898, C. 541, §47a2, 30 Stat., 557, as amended by Act June 25, 1910, C. 412, 36 Stat., 840 (Comp. St., 1913, 9631), providing that trustees in bankruptcy shall be vested with all rights, remedies, and powers of a creditor holding a lien.—Mergenthaler Linotype Co. v. Hull, 239 F. (U. S.), 26.

INSURANCE RECOVERY BARRED

Where a fire insurance policy covering a business building and a stock of merchandise contains a clause reciting that the assured agrees to make an annual inventory and to keep a set of books showing a complete record of the business transacted, including purchases, sales, and shipments, and that such inventory and books shall be securely locked in a fireproof safe at night, and at all times when the store is not open for business, and that on a failure to produce such inventory and books for the inspection of the company, the policy "shall become null and void, and such failure shall constitute a perpetual bar to any recovery thereon," a failure to keep such inventory and books in a fireproof safe at night, whereby they are destroyed by fire, will ordinarily bar a recovery on the insurance policy.—Crandon v. Home Insurance Co., 163 P. (Kans.), 458.

* * *

Potters Meet to Consider Workmen's Demands

Practically every general and chinaware plant of the United States was represented at a meeting of the United States Potters Association, held at the Kenilworth Country Club at Newell, W. Va., August 7, when the demands of the National Brotherhood of Operative Potters, recently submitted to the manufacturers, were considered.

About sixty members of the association, representing plants in East Liverpool, Chester, Newell, Wellsville, Sebring, East Palestine, Salem, Cannonsburg, Kittanning, New Castle, Mannington, Wheeling, Beaver Falls, Carrollton, Minerva, and also many of the eastern shops attended the meeting.

STRAWS *that* SHOW *the* WIND

Brief Paragraphs from Many Points Indicating the Market's Trend in the Light of Building Activity

Generally the situation in the Hudson River district is not altogether satisfactory. The labor shortage has been a very depressing factor in the development of business this season and even now, when the season should be at its height, many yards are only working to part of their capacity because they cannot get sufficient help. Many colored men were brought from the South this year, as they were last, but they found employment in other lines and have not been numerous on the yards. It is practically impossible to obtain other laborers except at prohibitive prices. The shipping situation is not good either, tho as long as the deliveries can be made by boat to buyers along the river or the bay below, little difficulty is experienced. As soon as it is necessary to ship by rail the trouble begins. Few are able to assure delivery at any specified time. Silk men are organizing to buy a ship to bring their raw material from Japan. It may be that brick men will have to carry out plans which they formulated years ago for exactly this sort of service. The situation is such that some plan, original and effective, will have to be devised if builders are to be assured of their material in such quantities as to keep their operations moving.

⁂

July has been a good month in the building business in the largest city of New Jersey. Estimated cost of permits for the week ending July 27 are $270,075 as compared with $84,367 for the corresponding week of 1916. This means that July, 1917, is more than $80,000 in excess of July one year ago. In the opinion of experts Newark ranks high with the rest of the country as regards her building record. This year is better than last year and unless all signs fail Newark is going to beat last year's figures right up until midnight of December 31, 1917.

⁂

According to the records of Building Inspector Preston, building trade in Wilmington, Del., during July showed an improvement over the corresponding month of last year. During July, this year, 98 permits were issued, the total valuation of operations authorized being $326,525, an excess of $23,413 over July of last year. Notwithstanding the fact that there is a general impression that no dwellings are being built—tho it is known that large blocks are planned by an outside syndicate—the report shows that 24 dwellings were included in the permits. While this is a small number, it shows that something along that line is being done. This month, in all probability, plans for a large number of houses will be submitted to the building department for permits by outside interests who have taken up the inadequate housing proposition here.

⁂

The monthly report of the yearly building inspector at Philadelphia, Pa., shows that in July permits have been issued for more than $5,000,000 worth of building in Philadelphia—an increase of more than $1,500,000 over the

You want
BURNING CONTROL
To get it—
You Need More Than Your Experience and Good Judgment

Why don't you try the Veritas System? It opens up entirely new methods of temperature control, it teaches you new points in burning that are not ordinarily evident, it indicates exactly, at any time, just what work the heat is accomplishing, it is always accurate and greatly increases the interest of the burners.

Such firms as the Cleveland Hydraulic Press Brick Co. and The Dover Fire Brick Co. are using it, and new high grade plants are added each week. We guarantee results or we won't install.

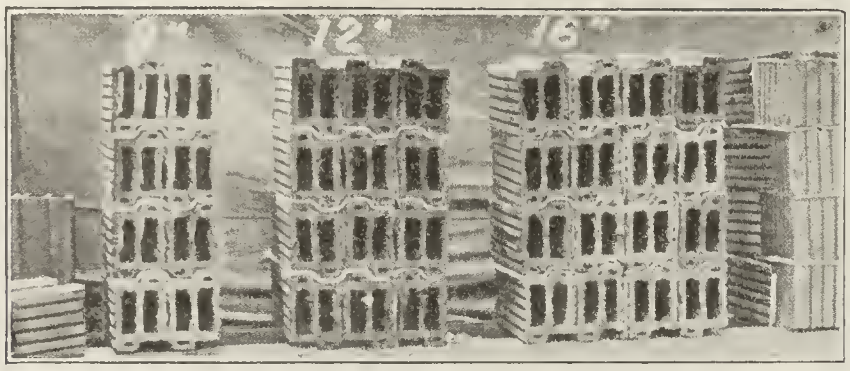
The Veritas Firing System Co.
Trenton, N. J.
and Herbert Forester, Box 37, Cleveland, O.

Look This Car Over Carefully

Note the way it is braced, and the manner in which it is put together. Stout and rugged, capable of resisting dipper hammering, big chunks dropped into it, derailments, etc. In addition it is Bottom Dump, it does not hammer itself to pieces when dumping.

The Youngstown Steel Car Company
Youngstown, Ohio

The "LOXALL"



A better hollow block

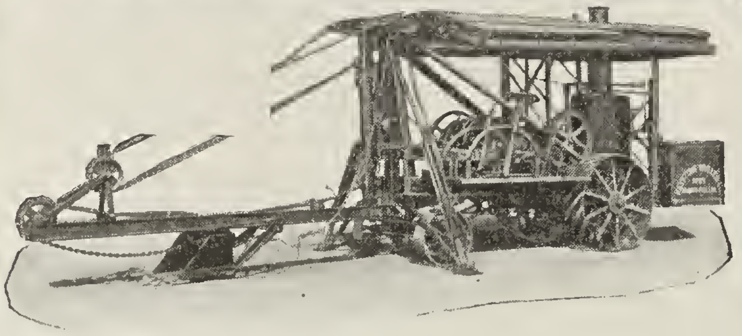
To make sales readily, to keep your factory always working on **orders,** to have satisfied customers and masons that boost your block, you must have a better hollow block—that means "Loxall." It is easy to make and easy to sell. Get the particulars on yard rights from

J. E. EXNER

602 Lincoln Street COFFEYVILLE, KAN.

"LOXALL" is patented in the U. S. A. and Canada

KEYSTONE



PORTABILITY

THE KEYSTONE EXCAVATOR (MODEL 3) is a light traction shovel. It weighs ten tons, wheel-base, about ten feet. Rear wheels 55-inch in diameter with 16-inch tires. Front wheels 30 inches in diameter with 10-inch tires. It has two traction speeds and will go anywhere on its own power where you could take a loaded dump wagon.

SKIMMER BUCKET ½-YARD CAPACITY. Machine will load 250 to 500 cubic yards in ten hours, operated by two men. Replaces 25 to 50 hand shovellers, has powerful crowding thrust and will dig toughest fire clay. We will furnish names of brick manufacturers, cement plants, etc., using Keystone Shovels in pits under all conditions.

You save in first cost, up-keep, repair expense and moving cost. Get from one set-up to another in quick time. No planking necessary if ground is dry and solid.

Your Engineers agree that it is good business to install two light machines in place of one heavy unit. The explanation is **PORTABILITY!**

All operations illustrated in catalog, which will be sent on request.

KEYSTONE DRILLER CO., Beaver Falls, Pa.

170 Broadway, New York City Carthage, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

month of June. This increase, however, is not due to any unusual boom, but to the fact that the permit has been issued for the new library building, shortly to be erected in that city, which will cost approximately $2,535,000.

* * *

An increase in building in Pittsburgh, Pa., during July over June was reflected in the report of the city building inspector, which shows work projected during that period as having a value of $1,375,752. The report for June showed a value of $976,259, while that of July, 1916, was $966,296, an excess over the figures of last year of $408,456. Comparatively few permits have been taken out for dwellings, but the let-up in that line of construction has now been more than offset by garage, warehouse and factory building.

* * *

The high price of lumber in Cleveland, Ohio, seems to have turned the attention of contractors and builders to brick and clay products as building materials, and an analysis of the municipal building statistics shows that while building as a whole has suffered a slight reverse during July those types of construction which require brick and tile are on the increase. The principal increase is shown in factory construction which has responded at once to the placing of large domestic military orders in that section. Apartments and small business buildings, which must be of general brick or tile construction according to the building code, also show considerable activity. It has been something of a surprise, however, to see fire safe material replace lumber for the construction of single and two family residences, a construction in which lumber has been heretofore paramount, the principal argument being its cheapness.

The most interesting development to the brick industry has been the tendency recently to use these materials in the field of single residences. While private capital has not been bold enough as yet to enter this field at least two companies have been formed in Cleveland to make the experiment of competing with lumber on a basis of cost in the construction of single dwellings. One company is the Fire Safe Development Co., which is building a number of tile residences to cost around $10,000 and the other the Homesuite Home Co., which will build communities of 100 workingmen's fireproof homes of hollow tile and sell them on reasonable terms. That lumber has suddenly become a high-priced commodity thru war conditions is indicated by the bitter complaints of retail lumber dealers that the high price of lumber has driven the small investor out of the building business and that many plans have been cancelled on this account.

* * *

The building activity in the industrial part of the Cleveland Federal Reserve District, including western Pennsylvania, West Virginia and Ohio, or roughly the Pittsburgh, Cleveland, Wheeling and Youngstown districts, as stated in the Dodge reports, shows a total for the first seven months of 1917 of $123,934,000, against $95,328,000 for the corresponding period of 1916. Factory construction was responsible for a large part of the increase.

* * *

Taking the first seven months of the year, Cincinnati's building statistics show an increase over the same periods in the two previous years, the total up to yesterday being $7,448,025, as against $6,058,955 for 1916 and $6,942,764 for the first seven months in 1915. The total cost in July was $707,615, this being a decrease from the records of the corresponding months in 1915 and 1916.

* * *

A marked improvement in the car supply at Louisville, Ky., has been noted in the last two weeks and the shippers at that point are reporting that their products are being moved out with much more facility than has been possible heretofore for some time. Also, coal is more readily obtained, and there is not the competitive bidding which has been encountered for some months. A strike in the western Kentucky field has petered out and been called off, but there has been a strike of miners called in the eastern Kentucky-Tennessee field.

* * *

Dawn is breaking in the building material market in the Louisville (Ky.) section and the members of the brick and other clay products trade feel that the darkest hour the poets speak of has passed. The reason is apparent in a sudden increase in the volume of inquiries which are being received by the dealers and the manufacturers. The architects are also receiving many inquiries and the expectation on all sides is that as soon as the several thousand laborers now employed at the army cantonment just outside the city are released building operations will be started on what promises to be an extensive scale. The committee representing the architects, building contractors, material men, etc., is preparing to launch its educational campaign the purpose of which will be to show people that, altho building materials have advanced, they have not gone up, relatively, to anything like the extent that has been true of most other materials. The demand from outside of the city and immediate vicinity is holding up in a most satisfactory way, and shipments to outlying points are being made regularly.

* * *

UNITED STATES PROMISES ABUNDANT CROPS

(Continued from Page 303.)

agriculturist over our own domestic product, when the facts are all the other way."

There is also a greater acreage, and an almost certainty of a greater production of broom corn, and the sorghum grains, kafir, milo and feterita, than any previous year. The harvest of oats is especially remarkable for the abundant yields per acre in nearly all sections, but here and there the plant has suffered from winter killing and drouth. Yet the ultimate output will probably be not far from a billion and a half bushels. The small grains as a rule are doing very well, but there are exceptions. As a whole, it is believed, the yield of the rice crop will not vary much from that of 1916 which was the largest up to that time.

BANNER POTATO YIELD

The production of potatoes, both Irish and sweet, will probably exceed that of any previous year, according to the National Chamber report. Tobacco is in general a good

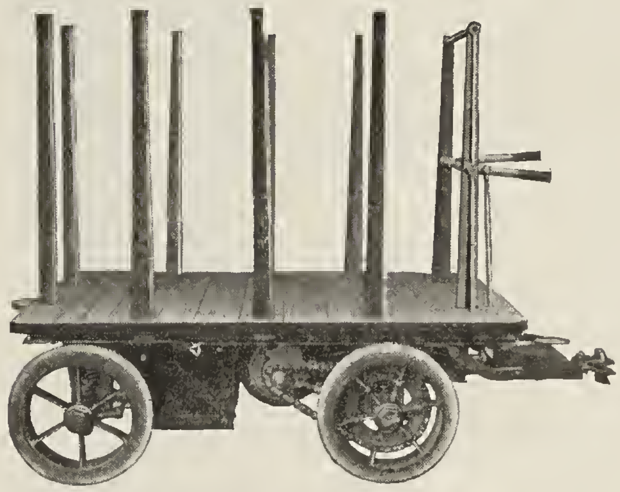
KOPPEL

Complete Industrial Railways

CLAY and DRYER CARS

Designed and built by specialists. Cars, Portable Track, Rails, Steel Ties, Switches, Frogs, Turntables, shipped from stock.

ELECTROMOBILE
TRADE MARK
INDUSTRIAL TRUCK



Mechanically and financially the Electromobile electrically driven industrial truck is the most efficient of its type on the market. Write for catalogs on Industrial Railway Equipment and Electromobile Trucks.

PLANT:
KOPPEL,
PA.

ORENSTEIN-ARTHUR KOPPEL CO.
Branches all over the World

Sales Offices:
New York
Chicago
Pittsburgh
San Fr'isco

SAY "I SAW IT IN BRICK AND CLAY RECORD"

IF IT'S A QUESTION OF KILNS—
WE CAN ANSWER IT

Equally efficient in round, square or rectangular kilns, single or multiple stack type. New Hook Kilns cost less, as a rule, than kilns of other styles. Old kilns can be changed to our type at comparatively small expense.

Give us number and size of your kilns, kind of ware, burning time and fuel consumption. We will estimate cost of installation and saving that can be effected.

Grate Bars, Bands, Lugs, Ventilators, Castings

HOOK PATENT KILN CO.
High and Spring Streets
COLUMBUS, OHIO

crop. In spite of handicaps the hay production will be large. There is an unusually large crop of beans and peas.

Remarkable is said to be the enormous acreage of peanuts this year, something over two million acres, with a production possibly of some sixty million bushels. The outlook is for a good yield of sugar cane in Louisiana, Mississippi, Alabama, Georgia and Texas. The best sugar production this year will in all likelihood, the National Chamber committee says, exceed that of any previous year.

The innumerable gardens and cultivated back lots have produced an output of vegetables of unexampled volume. As a result of this new industry, there are being shipped weekly to the large markets thousands of carloads of early vegetables and fruits. The real difficulty in many cases is finding an adequate market at remunerative prices for much of this product.

The total amount of fruit will be very great, according to promises held out. Peaches will exceed the production of last year and the yield of apples will be large. The citrous fruits—oranges, lemons and grape fruits—are an exception to the otherwise favorable story of fruits.

Cotton is very backward, but so far has not suffered seriously from the boll weevil. There has been quite a reduction in its acreage from that originally planted, but the present outlook as a whole is more favorable than any time since it began growth.

WITH THE LIVE STOCK

The cattle industry is good, tho cattle on the ranges in eastern New Mexico and in western Texas, have suffered severely from lack of rain. Hogs as a rule are doing very well. The daily industry appears to be a growing one in practically every section, and the value of poultry as an adjunct to the farm is being recognized all over the country by intelligent prosecution of this business. The condition of the sheep industry is reported as excellent, while wool commands the highest price known in many years. The demand for horses is reported good with high prices, and this is equally true of mules. It is said that the fishing industry is in excellent shape, equally on the Great Lakes and the Atlantic and Pacific coasts.

Building as a whole is declining, particularly in the large cities, and to a somewhat lesser extent in the country districts. It is ascribed to the diversion of capital to government loans, and to the exceedingly high prices of all building materials.

Mining in all forms is unusually good thruout the country, tho very much handicapped, it is said, at present by serious labor troubles and strikes in some sections. There is a great demand for coal oil and its by-product—gasoline. It commands a good price, but new development work has been slowed up by the very high cost of sinking wells, and the difficulty of getting the necessary casings.

"Manufacturing of all kinds is exceedingly busy, being overwhelmed with orders but suffers, however, from difficulty in procuring raw material and the very great and constant changing personnel of labor in its employ," the report concludes. "It finds it very difficult, consequently to work out systems of efficient production with these handicaps."

⁂

J. J. Rowe, manager of the Columbus (Ohio) branch of the American Sewer Pipe Company, has returned from a business trip to Cleveland and Detroit, where he investigated conditions. He reports booming business at both points. With better car facilities the Columbus concern's business is looking up to a large degree.

WEDDED TO BRICK *for* THIRTY YEARS

(Continued from Page 314.)

end of the city along the route of the Lincoln Highway, the work being paid for out of the fund which had accumulated in the Road and Bridge Fund of the township. In the fall of 1915 one mile and a half more of brick pavement was added to the one-fourth stretch west of the city and paid for the same way.

So highly pleased were the people of Sterling with the brick highway work which has been done, that, in the winter of 1916, they voted $60,000 in hard road bonds under the Tice law, and during that year a three-mile stretch of brick road was built east of the town. This made a continuous stretch of seven miles of brick pavement on the Lincoln Highway—a fact which Sterling advertises extensively to attract tourists to its city.

All of the country paving in the Sterling Township on the Lincoln Highway is eighteen feet wide and is built with a cement curb, the brick being laid on a sand and gravel or a crushed rock foundation. West of the city, the brick pavement has a gravel shoulder and roadway on each side, while the stretch leading into Sterling from the east has a narrow shoulder and gravel on one side and an earth roadway on the other.

This is not all of the town's country paving, however. Using the bond money left over from the three-mile stretch of road built east of the city, the highway commissioners early in 1917 let a contract for the construction of one mile of brick road on the Indian Head Trail, north of the city, and which is now being laid. In the construction of this pavement, the sand cushion has been abandoned and the semi-monolithic type of pavement adopted. The brick are laid in the dry cement previously leveled with a template and the bond between the two being formed by wet grout poured upon the pavement. This stretch of pavement is sixteen feet wide and is laid in the center of the highway with a liberal width of gravel shoulder and roadway on each side.

It happens that each of the roads paved by Sterling are in routes included in the proposed $64,000,000 system of paved roads, the bill for which has just been passed by the state legislature and is now awaiting the governor's signature.

LAND VALUES JUMP

A very interesting result of the progressive paving program adopted by this city is the phenomenal increase in the value of land adjoining, or close to, the improved highways as revealed in the recent sale of a large farm now owned by F. A. Carlson. Two years before the three-mile brick road on the Lincoln Highway was built, this farm was sold for $250 an acre. Shortly after the completion of the pavement the same farm, altho sold at public auction, brought $300 an acre.

It is also very interesting to note that the example which Sterling has set in the construction of brick roads is being followed by other municipalities and towns in the surrounding countries, many of which, impressed by the perfect condition of the pavement after, in some cases, more than a score of years of service, have themselves launched campaign for better highways and have adopted brick as the standard paving material.

It Takes Good Steel To Build Good Cars

—and some time ago we determined that we would give the clay products industry prompt shipment on LAKEWOOD cars at all times.

So—we laid in a big stock of high grade steel (the only kind we use) and we have also enlarged our manufacturing facilities so we can give you

Prompt Shipments on

Dryer Cars

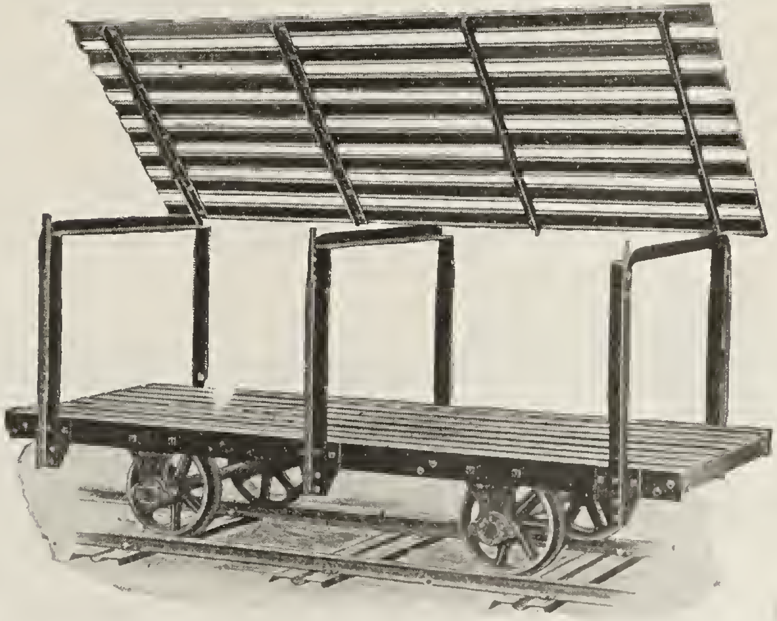
and

V Dump Cars

This is only another instance of the practical benefit you get from LAKEWOOD SERVICE. Use our products once—entrust your orders to us—and you'll continue to

Leave It to Lakewood

The
Lakewood Engineering Co.
Cleveland, Ohio



Kissel ALL-YEAR Cab with New Kissel Trucks

ALL-YEAR Cab showing winter attachments.
Pat. applied for
ALL-YEAR Cab without winter attachments is standard equipment.

All-Year Comfort for Drivers Increased Results for Owners

Here is Kissel's contribution to the motor truck field—the New **ALL-YEAR Cab**—a feature that will be eagerly welcomed by motor truck drivers and owners in the *brick and clay business,* because it:

Protects drivers in wet, stormy or cold weather—

Removes the necessity of layups on account of rain or snow storms—

Discourages speeding—diminishes possibilities of accidents and excessive wear and tear—

Keeps trucks in operation the year around, regardless of weather—

In its summer form it provides drivers with a cool, open housing. In winter the ALL-YEAR Cab is quickly changed into a warm, dry closed cab—weather-proof, draught and leak proof—by adding the winter attachments—$50 extra.

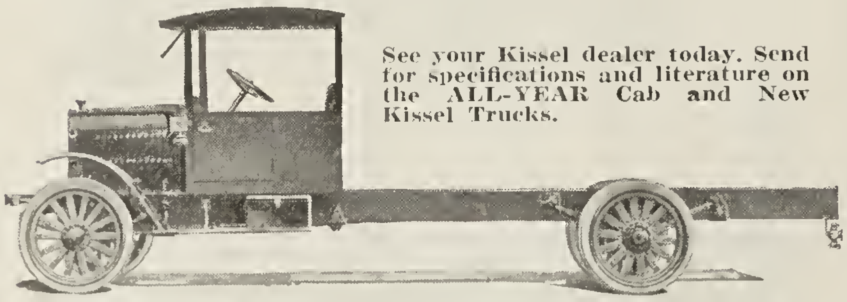
Announcing the Five New Models of

KISSEL TRUCKS

A Truck for Every Purpose

Never before has there been offered to *brick and clay owners* so much truck quality at the price. Chassis prices, $1185 to $3750.

See your Kissel dealer today. Send for specifications and literature on the ALL-YEAR Cab and New Kissel Trucks.



Kissel Motor Car Company
Hartford, Wis., U. S. A.
Agencies in All Principal Cities and Towns

Builders Launch Campaign in Louisville

Members of the building trades of Louisville, Ky., are organizing a campaign to stimulate building operations in that city. High prices, shortage of labor, and the war has brought about a severe slump in construction work with the result that the architects' offices are not as busy as they usually are at this season, and the building contractors have felt the slump. At this time the exigencies of the demand at the army cantonment have given the workmen plenty to do, but a number of the contractors have been left high and dry.

Capt. Brinton B. Davis, president of the Louisville Engineers' and Architects' Club, took the initiative in organizing the campaign and called a meeting of the building trades representatives of the city at the club headquarters. It was well attended and a committee was named to work out the plan for combating the "false economy hysteria" which followed declaration of war. T. Bishop, of the Southern Brick & Tile Co., and president of the Louisville Brick Manufacturers' and Dealers' Association, is the representative of the brick men on this committee, of which Capt. Davis is the chairman. The building supply men and all the building trades are represented on the committee, the first meeting of which was held on Monday, July 9.

At the meeting, which was held in the Architects' and Engineers' Club, there were talks by Mr. Davis and others. Mr. Davis, among other things said: "The present and future welfare of the nation and the welfare of those who expect to erect buildings during the next decade demands that construction work continue, at least as actively as during the past year. As architects, engineers and builders, it is our patriotic duty to encourage building operations rather than discourage such activities. We will thus be rendering valuable service to our country and to our clients."

⁂

Brick Gains as Lumber Prices Soar

Now that prices of other materials are soaring beyond precedent, New Orleans architects are beginning to turn to brick for a solution of the building problem, says the "Building Review."

Brick is the one material which has shown only a nominal increase. One architect pointed out recently that the time has arrived when it is practically as cheap to build of brick as of wood, and predicted that during the next year brick will come into unprecedented popularity for construction of residences.

So look for the all-brick bungalow next.

During the past year, this architect said, lumber has increased on the average fully fifty per cent. in price. Such low-grade material as sheathing has been boosted from $14 to $22 per thousand feet. Certain higher grade lumber has gone up sixty-five per cent., and some grades of flooring have increased eighty-five per cent.

Stucco on lath construction has become almost prohibitive on account of the scarcity and high prices of metal lath and the greatly boosted cost of cement. The paint situation is an important factor favoring brick over frame construction. In two years white lead has advanced about eighty per cent., there being a thirty per cent. rise in the past month. Linseed oil, which formerly cost sixty cents per gallon, now cannot be bought for less than $1.21, and costs more except in very large quantities. Prepared paint that brought $1.70 a gallon in 1915 is now selling for $3.50, and is said to be of inferior grade.

The increase in brick prices thus far has been only about ten per cent. However, the car shortage is hampering the brick market; most of the manufacturers near New Orleans could easily sell a greater output than they now can ship.

Another notable feature of the present situation is the pains which are being taken to preserve all materials. Left-over odds and ends that used to be given away are now being carefully collected and stored. The salvage companies are busier than ever before, there being a remarkable demand for all second-hand materials. They are even digging up old foundations, and scraping and selling the brick; in former times the "house-wreckers" going to this extreme would have been regarded as a fit subject for a lunacy inquest.

* * *

I. C. C. Creates Division of Car Service

The Interstate Commerce Commission has just created a Division of Car Service. The commission thru this division will regulate car service thruout the United States, and, where occasion requires, orders or directions of the commission will be issued under the Car Service Act direct to the carriers concerned. Subject to this fundamental principle, the Division of Car Service will, as far as practicable, avail itself of co-operative effort on the part of the carriers' Commission on Car Service now located in Washington.

Complaints and communications regarding car service received by the commission will be handled thru the new division. The field service will be developed as occasion requires. It is expected that shippers and receivers of freight will to the fullest extent aid in promoting car service by promptly loading and unloading carload shipments, by capacity loading, where possible, regardless of carload minima, by readily adapting themselves to such modifications in the handling of less-than-carload shipments as may be found necessary, and by hearty co-operation in the other methods which have been or may be devised to meet the transportation problems confronting the country.

CHAIRMAN COOKE APPEALS FOR CO-OPERATION

"If this country does not learn to load, route and handle its freight cars more practically, we will soon be in as bad a situation as are some of the European countries. In England, I am informed, many classes of non-military shipments can get the use of the railways only one day in seven. If we don't watch closely, we will have no transportation facilities here for commercial purposes."

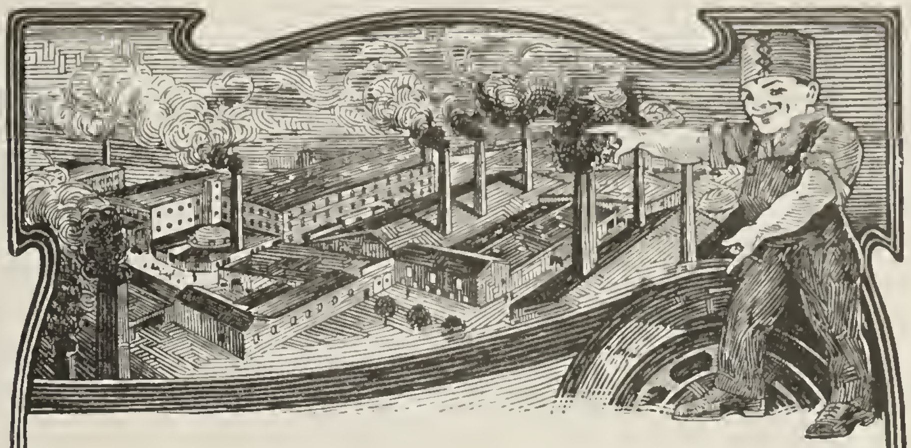
This statement was made recently by M. L. Cooke, chairman of the sub-committee on storage facilities of the General Munitions Board.

"We are going to appeal to manufacturers at local points for co-operation. They can help wonderfully by so assembling and shipping stores so as to require the minimum of handling and haulage, thus expediting shipments.

"This co-operation can be made most effective by eliminating shipments in less than car load lots. This will be accomplished by local committees which will see to it that different manufacturers making goods for the same destination point are brought together."

* * *

Keep money moving. One dollar in circulation is worth a thousand hoarded. Do nothing to interfere in any way with the calm and uninterrupted course of every day life.



"On-the-Job" Gandy The Moving Spirit of Industry

Thirty-seven years' service in the field has made GANDY recognizable everywhere as the "moving spirit of industry."

To the great army of wheels in mills, mines and industrial plants, the command has come to speed up—to increase production—to supply the needs of a world in arms.

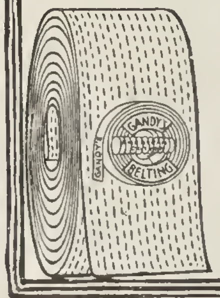
Your company of wheels will do the expected and deliver maximum production if "On-the-Job" GANDY—the original stitched cotton duck belt—is in command.

You've only to put GANDY to the test to prove that you've got a belt that gets **all the pull from the pulley.**

The Government has right of way on all transportation lines—traffic conditions can hardly be expected to improve—we advise prompt ordering for present and future needs.

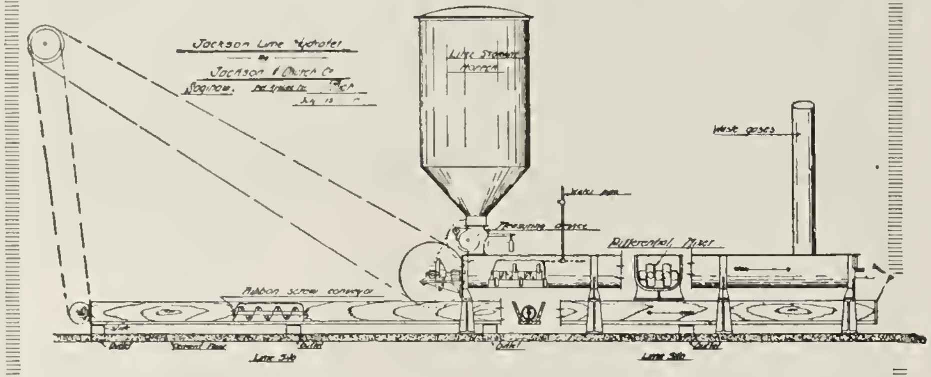
Upon receipt of belting order, look for painted green edge and well-known GANDY trademark.

Request samples and prices—obtainable at mill supply houses or home plant.



The Gandy Belting Company
732 West Pratt Street
Baltimore, Md., U. S. A.
New York Branch, 36 Warren Street

Improved Lime Hydrator

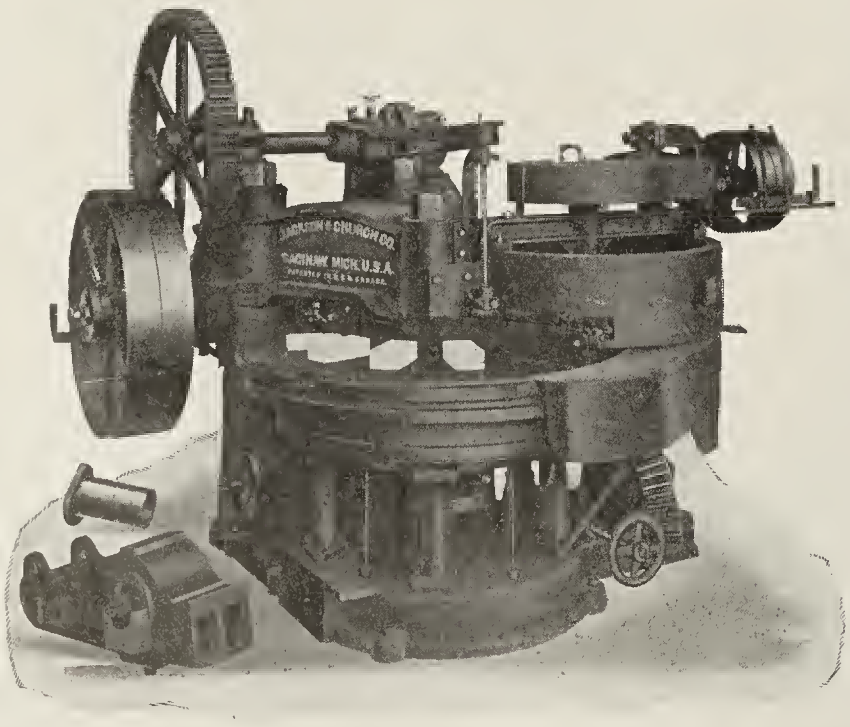


In the manufacture of Sand Lime Brick it is best to hydrate the lime on the premises. Our hydrator will do this better and cheaper than any machine in use and is not expensive to install. You can get full information by writing to

Jackson & Church Co.
SAGINAW, MICH.

Builders of a Complete Line of

Sand Lime Brick Machinery, Boilers, Tanks, Structural Iron, Castings, etc.



Clay Products in Alabama for 1915

Clay products of Alabama in 1915 were valued at $1,193,022—brick and tile, $1,177,725; pottery, $15,279—a decrease of $381,001, according to Bulletin No. 19, of the Geological Survey of Alabama, just published. The principal clay product was common brick, valued at $382,092, or about thirty-two per cent. of the state total, a decrease of $256,754 from 1914. The quantity of common brick reported for 1915 was 70,681,000 brick, a decrease of 40,054,000 brick. Common brick was closely followed by vitried brick or block, valued at $374,387, an increase of $125,862. The quantity of vitrified paving brick marketed in 1915 was 29,018,000, an increase of 10,339,000 brick. Alabama ranked twenty-fourth in 1915 among the states in value of clay products, and sixty-five operators reported sales.

Jefferson County was the principal clayworking county, and reported a production valued at $815,338, or sixty-eight per cent. of the state's total value in 1915. This, however, was a decrease of $213,797 from the value of its 1914 production. Nearly all of the fire brick produced in the state comes from Jefferson County. Jefferson County is also the only producer of vitrified paving brick. The principal producing counties of common brick, named in the order of the value of output, were: Jefferson, Montgomery, Russell and Talladega.

There was a decrease in the quantity of fire brick of 1,391,000, or 15.95 per cent. and in the value of $21,486, or 12.86 per cent.

The pottery industry of Alabama is of relatively small importance, as only the commoner and coarser grades of ware are produced, and most of this for local trade only. Production was reported in 1915 by thirteen firms, the same as in 1914. The output was valued at $15,297, a decrease of $1,245, or 7.53 per cent. The products consisted of red earthenware and stoneware only. The rank of Alabama in this industry for 1915, as for 1914, was nineteenth.

The total amount of clay mined in Alabama and sold as such in 1915 was 31,870 short tons, valued at $35,232. This was an increase in quantity of 3,897 tons, or 13.93 per cent., and of $625, or 1.81 per cent. in value, as compared with 1914.

⁂

Report of Missouri Geological Survey

The value of the clay products in Missouri for 1915 showed a slump of over $600,000 under that for the previous year, according to a bulletin just issued by the Missouri State Geological Survey. This decrease is attributed to the lessened activity of building and general construction.

The manufacture of fire brick, which constituted more than thirty per cent. of the value, increased notably over 1914, while sewer pipe and common brick, which constitute the next two important items, decreased materially. Other products showing a decrease in value were fire-proofing, architectural terra cotta, face brick, fancy and ornamental brick, vitrified paving brick, and enameled brick.

St. Louis City and County, with extensive deposits of the Cheltenham clay, have always been the chief center of the fire brick industry—tho large plants are operated at Mexico, Fulton, Moberly and Vandalia. Sewer pipe is also manufactured chiefly in the St. Louis district, and at Brownington, Henry County, where extensive clay deposits are found at the base of the Pennsylvanian formation. Common brick and drain tile plants are more generally distributed, and the products are manufactured from alluvial, loessial, or residual surface clays. Pottery manufacture is of relative insignificance in Missouri, tho in 1915 some red earthenware was made in St. Louis County and some stoneware or Rockingham ware made in Stoddard County.

The amount of clay mined and sold in 1915 totaled in quantity 308,385 short tons, and sold at a value of $641,040. Both these figures exceed those for any previous year, tho thru the failure of a number of producers to report, the production is by no means complete. Of the clay mined and sold, fire clay constituted, as usual, over ninety per cent. and was obtained chiefly from St. Louis, Gasconade, Montgomery, Audrain, Morgan, and Callaway counties. The production of clay mined and sold in the state bears only indirect relation to the value of the manufactured clay products.

* * *

The Development of American Pottery

At a recent meeting of the American Chemical Society, held in New York City, a prominent ceramic chemist who has done much to give America those fine glazes and surfaces so much admired on fine pottery, was speaking about our South, and said that at two places in the South some of the finest American art pottery was being produced.

The early art of any peoples is an evolution product. The older the people the finer their art. America, with its many distracting influences and foreign elements introduced by immigration, is showing that it is working out a distinctive art, of as high an order as that of any nation. The first elements of any national art have been displayed in the pottery of a people. Our finest American art pottery is coming from those sections that have for quite a period felt the absence of foreign influence and foreigners. Some comes from Skyland, in the lofty mountains of North Carolina, some comes from New Orleans. New York state has quite a few establishments making splendid contributions, and at Boston and Marblehead, in Massachusetts, beautiful pottery ware is made. Ohio, in quite a few places, is producing some splendid ware, also Arkansas, while out in Arizona and New Mexico, the Indians still make their aboriginal designed pottery. It is the finer ware, such as from New Orleans, Skyland, Boston, Marblehead, New York and Ohio, of which we speak.

In all these places the local surroundings have furnished the inspiration for the product. The flowers, palms, and trees, and the swamps with their hazes, the moss-hung trees like bearded giants, are to be found in the Newcomb pottery from New Orleans, while from Sykland we get a breath of the brown mountains and their flowers and snow-covered peaks. From Marblehead we get the sea breeze, marine views, and the shore with its flowers and birds, while Boston bubbles over with history and pretty colors. Ohio and New York each have their own inspiration.

In the evolution of this art the ceramist has contributed much. Working to make better crockery, for cooking and tableware, and sanitary porcelain, drain tile, building tile, sewer pipe, flower pots, jugs, terra cotta, building and paving brick, and the fine and delicate porcelain used in the laboratory of the chemist, he learned much that he placed to account when he entered the art pottery field.

Erie Revolving Shovels

"We can conscientiously testify to the merits of the Erie"

"Both of our Eries have been in practically continuous use in quarry work and general excavation. After giving the Erie a thorough tryout at hard digging, I recommend it to any one in the market for a steam shovel." Leonardo Suzio, Meriden, Conn.

That's what they all say.

They like the Erie's *stronger* construction—Stronger truck frame, stronger boom, larger bearings—more metal and better metal at every point of wear and strain. They have found that this stronger construction makes the Erie a steady, reliable worker, in the hardest brickyard and quarry digging.

And Speed Champion! Faster on the swing. Quicker at getting into the digging. The easiest shovel for operators to handle *fast*. Result: More output. You get all the clay or shale you need, with your regular mechanical handy-man running the shovel. He has only three levers and a foot brake to control all digging motions.

Find out which is the best revolving shovel on the market. There are brick yards and quarries near you who *know*—and will be glad to tell you.

We will send you the addresses of some experienced shovel owners in your neighborhood. And we would like to send you our new Bulletin "B." You will find it interesting. Write for a copy.

Ball Engine Co., Erie, Pa.

Clay Plant Man Power Must Be Superseded By Machines

This is mandatory. It is caused by the necessity for men, National and Individual. Therefore, it is up to you; if you are to succeed, ways and means must be devised to not only replace the men who enlist, but also to secure machines that are able to do the work better and cheaper than ever before.

The Automatic Elevating Platform Truck

is a six to a ten men "answer" to your problem.

It is not only "man equivalent" but it is a better way in many ways.

The Ridgeway Brick Co. of Ridgeway, Pa., is saving $16.10 every working day by its new Automatic way of moving brick; a total of $4,830.00 each year. You can do this.

Our engineers will tell you how. What's your address?

The Automatic Transportation Co.
2933-2965 Main St., Buffalo, N. Y.

Pioneer manufacturers of Electric Storage Battery Trucks, and the only Truck manufacturers awarded Gold Medal at San Francisco Exposition.

That American clays could not be turned into pottery has always, until the present time, been accepted as a regrettable fact, but the beautiful American productions being made entirely of American clays are today a conclusive proof of the adaptability of our native material for the manufacture of pottery. The ceramist's work was to find the way to use this clay, and to make suitable colors and glazes, to determine how and to what temperature and degree they should be burned, and to devise the glaze.

* * *

Insurance Men Wage War on Shingle Roof

Fire insurance interests are going to make war on the wooden shingle, according to C. M. Cartwright, in the "Chicago Tribune," and many rating organizations thruout the country have already added a charge for the shingle roof in the revised rates which they have sent out. There has been much agitation recently among insurance companies as to the danger of the shingle roof, it being the cause of so many so-called chimney losses and also a breeder of conflagrations. The recent conflagration at Atlanta, Ga., which swept seventy-five blocks of houses, involving a property loss of $4,500,000, is directly traceable to shingle roofs. It is found in every conflagration of this character that burning shingles are carried a mile or so away, starting new fires, and finally the blaze gets beyond the control of the fire department.

Fire protection bodies have been telling the people about the danger of shingle roofs for some time, but seemingly little heed was paid to these warnings. Now the man with a shingle roof dwelling is to be penalized and, considering the extra fire insurance premium he will have to pay, it will be to his advantage to put on a noncombustible roof at the start.

The three conflagrations last year, at Paris, Tex., Nashville, Tenn., and Augusta, Ga., were all traceable to the shingle roof. During the last six months or so insurance organizations have been collecting data as to the shingle roof menace, and so startling were the returns that the rating authorities at once decided that it was necessary to make a charge for the shingle roof.

CHICAGO SETS THE PACE

In Chicago the board of fire underwriters a few years ago began allowing credit for a noncombustible roof. In some cities the fire insurance men have been so active in calling attention to the danger of shingle roofs that ordinances have been passed making shingle roofs prohibitive in the fire district. The higher cost of materials and labor have made fire losses much more expensive to the insurance companies and hence more than ever they are active in attempting to reduce all physical hazards to a minimum.

It was found at Atlanta, for instance, that where an owner did not carry sufficient insurance or had none at all the blow fell on him more heavily than he anticipated, owing to the present price of building materials. Even at Atlanta insurance men had been urging the adoption of an ordinance preventing shingle roofs, pointing out the possible dangers, and yet sufficient influence could not be brought to bear to induce the city council to act.

In most of the cities today are large residential areas with shingle roofs, and none is free from the conflagration hazard. Now that the rating authorities are taking hold of the situation and penalizing the shingle roof residence and making it an object to have noncombustible roofs, the newer structures, no doubt, will find it to their advantage to use approved fireproof roofing materials.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

---

To Slip or Not to Slip

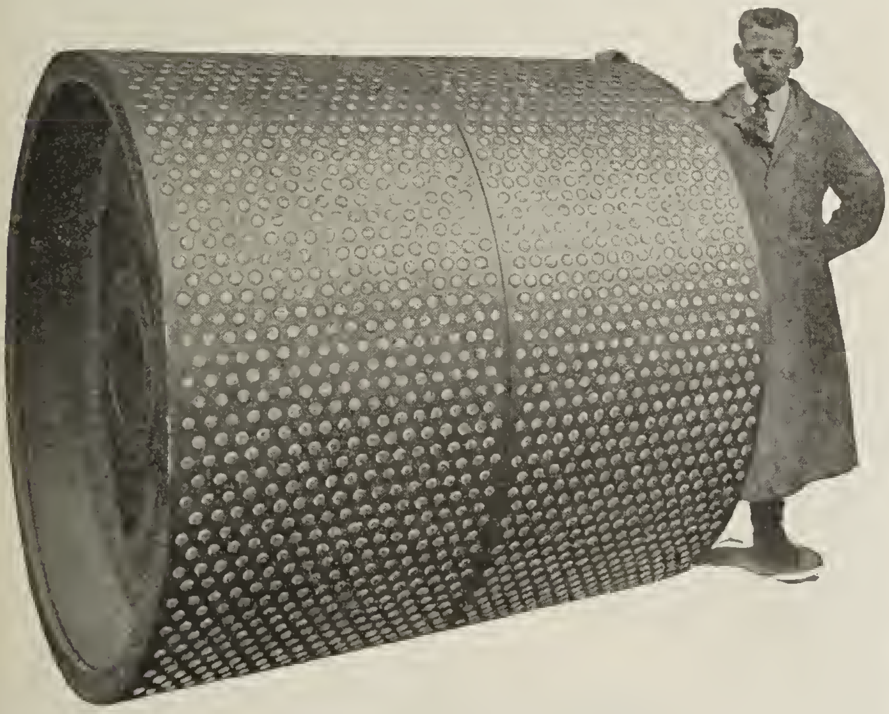
Have you ever walked with ordinary leather sole shoes on an icy pavement? If you have you know without our telling you how easily you slip under such conditions and how extremely difficult it is to keep your balance. You also know that if you apply some sort of friction surface to the sole or heel of your shoes it is a great deal easier for you to walk on the ice.

If you will just apply this very same principle to a belt as it revolves on a pulley or a flywheel, you will readily understand why it is necessary to overcome the slipping of your belts. It is simply impossible to prevent the surface of the pulley and also the surface of the belt from becoming smooth.

There have been many kinds of products manufactured to apply to the surface of the belt to overcome this trouble, and some of these have proven to be fairly satisfactory. This, however, is always a tedious and expensive operation and is not to be compared for economy or efficiency with the use of Cork Insert Pulleys. This is not something new, but it has been used in brick plants and almost every other industry in the country for many years. It is comparatively inexpensive in its first cost, and the friction surface is maintained for a very long period. This makes the Cork Insert Pulleys a very inexpensive product.

It must also be taken into consideration that the Cork Insert Pulleys obviate trouble from slipping belts, and where they are used there is absolutely no necessity of applying any kind of dressing to the belting. The friction surface is not wearing on the belts and yet it makes the belting more tight.

Brick plants that are using Cork Insert Pulleys have come to know that it is easy for them to make their machines run to full capacity without excessive power cost. This is an essential feature in brick plants because there is not only the cost of power to be taken into consideration where a belt slips, but it is a well-known fact that



Every Clay-Products Manufacturer Should Be Fully Advised As to the Efficiency to Be Gained from the Use of Cork Insert Pulleys

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.

400 Chestnut Street
Philadelphia, Pa.

SAY "I SAW IT IN BRICK AND CLAY RECORD"

The Price of Coal

subject to such uncertain conditions as exist at the present time, demands that you keep a watchful eye and an open ear upon this big factor of your operating expense.

The price of coal will not be any lower than it now is, and will undoubtedly go much higher within the next few months, because of the material increase in miner's wages and mining supplies.

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

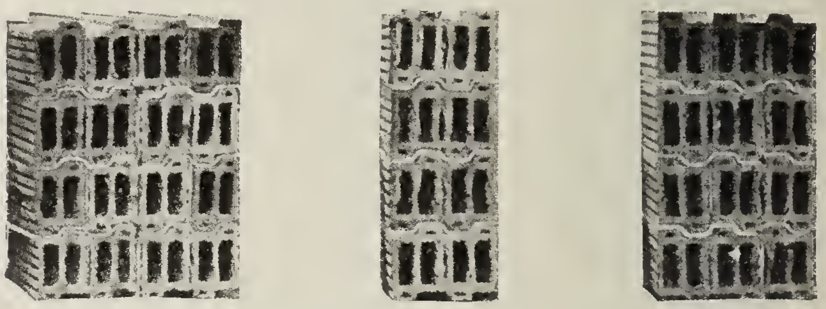
quality suffers, which, of course, means that costs rise and selling price is reduced.

Every clay-products manufacturer should be fully advised as to the efficiency to be gained from the use of Cork Insert Pulleys. Information and data can be obtained from the Cork Insert Company, of 168 Federal Street, Boston, Mass.

⁂

The "Loxall" Hollow Block

Every month sees additional clay-products manufacturers making arrangements with J. E. Exner, of Coffeyville, Kan., for the manufacture of the "Loxall" Hollow Building Block. This is a block that Mr. Exner's company manufactured and sold in immense quantities so that they were able to recommend the practicability of the block because of their own experience.



Note How Easily "Loxall" Can Be Built Into Different Thicknesses of Wall Construction

It is very easy to make and is also low in manufacturing cost. Aside from this it makes immediate favor with architects because of its good appearance and the fact that it is guaranteed to be a real heat, sound, moisture and air insulator. It also instantly appeals to brick layers because it is so easily and quickly laid in a wall.

The "Loxall" Hollow Block is made with interlocking lugs that dovetail perfectly, making a joint that the masons find easy to spread.

Mr. Exner is at the present time disposing of patent rights for the manufacture of this block in the United States and Canada, and a large amount of territory has already been alloted. It would be well for those who have not yet found out about this block if they would communicate with Mr. Exner relative to having the privilege of manufacturing it in their territory.

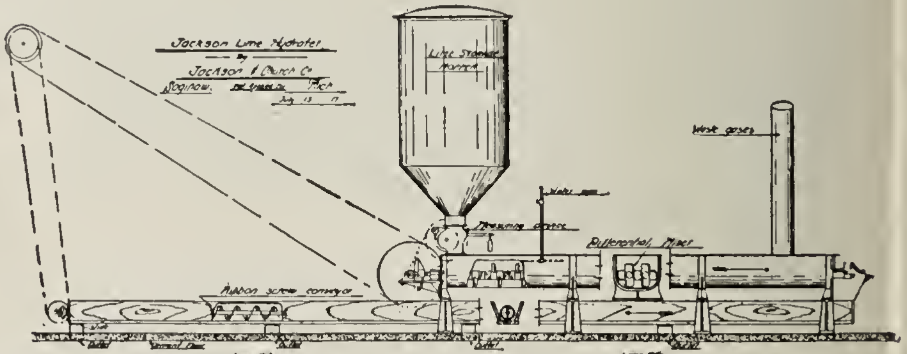
⁂

The Improved Lime Hydrator

In the manufacture of brick from sand and lime, it is necessary to use hydrated lime, which should be hydrated on the premises, immediately after it is received, to save loss from air slacking. With most systems in use, it has not been possible to do this and hold the labor or help.

The hydrator shown here, however, is inexpensive to install and simple to operate. The lime is unloaded, or wheeled from the railroad car into the elevator and carried to a metal storage tank, from which it is fed to the end of a double shaft differential mixer, where water is added to hydrate the lime, while traveling the length of the mixer, from which it is conveyed to the silos, and stored until needed.

This improved lime hydrator is manufactured by



The Improved Lime Hydrator Manufactured by Jackson & Church Company

Jackson & Church Company, of Saginaw, Mich., well known manufacturers of sand lime brick machinery. Full particulars can be secured from them by anybody who may be interested.

⁂

Big Demand for KisselKar Trucks

"Not only has the nation's present need for efficiency in haulage and delivery work created an unusual demand for motor trucks," says H. P. Branstetter, of the Kissel Kar, "but since the beginning of the war, America has exported over a million draft animals, whose work here in America must now be done by motor trucks. This is another reason why there is no limit to the production and sales of this industrial necessity.

"Single orders for forty, fifty or sixty Kissel trucks are no longer unnusual at the Kissel factory. In fact, such quantity orders are becoming common and I understand this is true of other reputable truck makers."

The KisselKar Truck has been brought up to such a high standard of efficiency particularly in the standardization of various parts used in manufacture to bring about a constantly increasing tendency of present owners of KisselKar Trucks to simply reorder KisselKars without giving consideration to other makes.

This is not only a demonstration of the satisfaction which KisselKar Trucks have been giving, but it also shows good judgment on the part of business firms who appreciate the economy to be gained from standardization. This is just as true of motor trucks as it is of brick machinery or anything else.

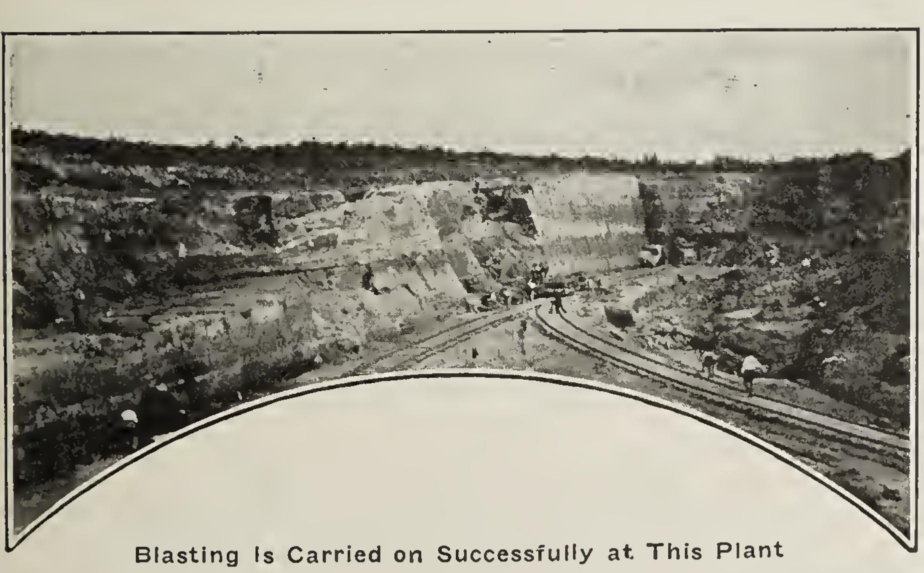
KisselKar Trucks are being used to a much greater extent in the clay-products industry, and it is quite natural that this should be so inasmuch as this is one of the best trucks that was ever sold to any great extent to brick and tile manufacturers. Their contact with clay-products people for many years has enabled the KisselKar Company, whose factory is at Hartford, Wis., to produce trucks that are particularly adapted for the hauling of brick, tile, sewer pipe and other clay products.

⁂

The Economy of Blasting

A larger number of clay-products manufacturers each season find out how much they have been losing either because they have not blasted their shale before attempting to dig it, or because they have not blasted in the most economical manner. This is a subject that for several years has had the attention of many in the ceramic industry, but there are hundreds of others who ought to give the subject a great deal of thought who have sidetracked it for other things that seemed more important.

Some of the companies manufacturing explosives have considered this so important a matter for brick men that they have spent many thousands of dollars gathering data and preparing booklets for the dissemination of knowledge that it was necessary to have in order to carry out successful blasting operations. The Du Pont Company, of Wilmington, Del., has been especially active in this connection, and if there is any brick company that has not yet had a copy of its book dealing with blasting on



Blasting Is Carried on Successfully at This Plant

THE STAR
Of the Power Transmission World

COST LABOR FRICTION BELTS POWER PRODUCTION

CORK INSERT PULLEYS

The SIX Points of SAVING—

POINT 6 PRODUCTION

You must get production to make your profit.

If your belts slip your machines run unevenly or under speed, and production falls. More than likely the quality suffers, the really conscientious help become dissatisfied because their output is curtailed, your costs rise, you have less goods to sell.

WHY STRUGGLE UNDER THESE UNNECESSARY HANDICAPS?

CORK INSERT PULLEYS

will get and maintain the rated speed all the time. They make certain the largest and most uniform production whatever your special line and however unfavorable the conditions.

WRITE US TO SHOW YOU how Cork Inserts will take care of *your* particular requirements and increase *your* production.

The Cork Insert Co.
168 Federal Street
Boston, Mass.

THE SLIP-STOPPING PULLEY

The "B-G" Portable Belt Conveyor

Eliminates Your Worst Labor Problem

With this light, practical conveyor you can reduce your handling charges at many points. The conveyor can be moved easily on its own trucks or on an overhead track, in a shed or in the open.

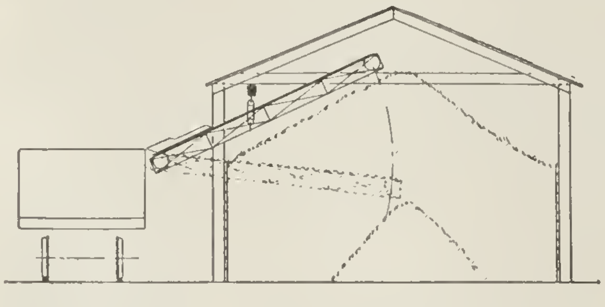
It handles **coal, clay** and **brick.** It will operate level or on an incline. It eliminates the wheel barrow and all rehandling and thereby **cuts the labor costs in two.**

Driven by electric motor within the frame. Eighteen-inch belt. Made in 12, 15, 20 and 25 foot standard lengths or in special lengths to suit conditions.

In writing for price, state length of conveyor required and voltage, phase, and cycle of your current.

Barber-Greene Company
Aurora, Illinois

532 Acklin Ave., Toledo, Ohio.
Maurice J. Watson Co., Newtonville, Mass.
Lucke Sales & Engineering Co., Minneapolis, Minn.
Machinery Rental & Sales Co., Kansas City, Mo.
Mussens Limited, Montreal, Canada.



For inside use in any type of shed piling coal or reclaiming clay.

clay plants, no time should be lost in securing this, inasmuch as it is sent with the compliments of the company.

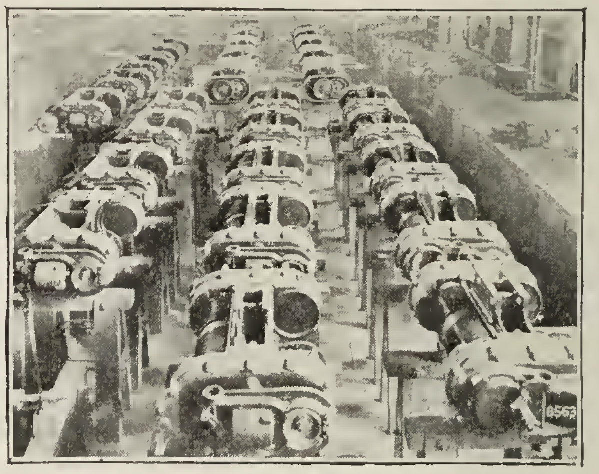
It has been demonstrated also in numberless instances that the only way to get the greatest measure of efficiency out of blasting operations is thru the use of well drilling equipment. The Sanderson-Cyclone Drill Company, of Orrville, Ohio, have made quite a study of this, and have been able to refer to a large number of clay plants where the Cyclone drill has been giving excellent satisfaction for long periods of time. They have considerable data that ought to be in the hands of every clay plant that has a high shale bank, regardless of whether explosives are used for blasting at the present time or not. It might be that the data which this company would send would enable many brick companies to see the advisability of conducting blasting operations, which might not be so successful without the use of a drill.

* * *

Link-Belt Electric Hoists

A large percentage of brick plants are using hoists of various kinds to excellent advantage inasmuch as there are many instances almost every week where it is desirable to move parts of heavy machinery or other articles about the plant.

Various kinds of hoists are in use and much interest has recently been displayed in the Link-Belt Mono-Rail Electric Hoists manufactured by the Link-Belt Company with factories in Chicago, Philadelphia and Indianapolis, and sales offices in the principal cities of the country. They are just completing a big addition to their Philadelphia plant which will be used exclusively for the manufacture of their hoists. On this page there is reproduced a photograph showing a partial lineup of hoists in the assembling department of this plant.



Electric Hoists in the Assembling Room

They are manufacturing two types of hoists with lifting capacities ranging from 1,000 to 6,000 pounds. They can be adapted for either direct or alternating current and fitted with plain, hand geared, cord operated motor, or a cage operated motor trolley. It is claimed that the Link-Belt Hoist is the first Mono-Rail machine to employ a dynamic breaking system for controlling the lowering speed. Dynamic lowering provides the delicate variable speed control that is so essential in the handling of heavy parts.

Some of the other good features of this hoist are the small amount of head room required; weather and dust proof construction; accessibility of working parts; simplicity and ruggedness of hoist gearing; automatic oil bath lubrication; renewable bronze bushings thruout; and "Safety-First" construction.

The Link-Belt Company has a new electric hoist catalog on the press, and they are at the present time accepting requests for this to be mailed as soon as it is ready.

* * *

Walter A. Zelnicker Supply Company, St. Louis, Mo., has just issued its new Bulletin No. 221, listing exceptional offerings in rails, locomotives, cars, cranes, pipe, piling and tanks. This bulletin is free for the asking.

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other
Tuesday by

Kenfield-Leach Company
445 Plymouth Court Chicago

Chicago, August 28, 1917
Vol. 51 No. 5

Leading Articles in This Issue

Apartments and Houses Scarce, with Rents Rising; Good Reason to "Build Now"....390
Spending a Week at Illinois' Largest Paving Brick Plant....394
Some New Light on an Old Problem....399
The Auditor Conducts a Performance with His Set of Trained Records....403
Government Applies Spanish War Lessons in Sanitary Engineering at New Camps....406
Stock Moving Motorized....409
Rate Fundamentals and Tariff Interpretations....411

* * *

The Editor's Corner....388

* * *

Special Departments

Machinery and Equipment....437
Pottery Notes....426
Questions and Answers....416
Straws That Show the Wind....408
The Superintendent....413
Wake of the News....418

American Clay Machinery Co....441, 443
Armstrong Mfg. Co....428
Automatic Transportation....434

Baird Mach. & Mfg. Co....Front Cover
Ball Engine Co....383
Beighlee Electric Co....426
Bell Locomotive Works....420
Black Diamond....440
Bonnot Co....372
Bristol Co....425
Broderick & Bascom....417
Brown Instrument Co....379
Buckeye Traction Ditcher Co....435

Canton Grate Co....427
Celite Products Co....416
Ceramic Supply & Cons....420
Chambers Bros. Co....375
Chase Fdry. & Mfg. Co....449
Clarage Fan Co....414
Classified Ads....456, 458
Cleveland Alloys Co....445
Cling-Surface Co....431
Cork Insert Co....414
Crescent Belt Fastener....415
Crimora Manganese Co....415
Cyclone Grate-Bar Co....424

Didier-March Co....452
Duplex Truck Co....384

Eagle Iron Works....416
Eastern Mchy. Co....455
Elwell-Parker Electric Co....419
Englehard, Chas....382
Exner, J. E....429

Fate Co....459
Forester, H....430

Gandy Belting Co....439
Garnet Company....445
General Electric Co....385
General Store....445
Goodyear Tire & Rubber Co....381

Hardinge Bros., Inc....415
Harris Bros. Co....457
Hendrick Mfg. Co....449
Hettrick Mfg. Co....430
Homestead Valve Mfg. Co....445
Hook Patent Kiln Co....432

Illinois Boiler Cleaning Compound Co....445
International Clay Machinery Co....376, 377

Jackson & Church Co....438
Jenkins Bros....423

K-B Pulverizer Co....417
Keystone Driller Co....418

Lakewood Eng. Co....436
Link-Belt Company....386

Main Belting Co....373
Manufacturers Eq. Co....374
Marion M. Fd. & S. Co....416
Marion Steam Shovel Co....425
Marsh & Co., Geo. C....458
Mathews Gravity Carrier....451
Morgan Co., F. W....414

Ohio Filler & Shield Co....421
Ohio Galv. & Mfg. Co....450
Orenstein-Arthur Koppel Co....453
Osgood Co....449
Owens Continuous Tunnel Kiln Co....445

Philadelphia Textile Machinery Co....380
Potts & Co....414
Price Electric Co....422

Quaker City Rubber Co....453

Randall Graphite Sheet Lubricator Co....414
Roessler & Hasslacher....422
Rollin Chemical Co....421

Sander Instrument Co....417
Sanderson-Cyclone Drill....415
Sauerman Bros....414
Sawyer Belting Co....450
Scandinavia Belting Co....428
Schofield-Burkett Cons....451
Sero Specialty Co....417
Service Motor Truck Co....378
Smith Co., Claude....371
Standard Dry Kiln Co....426
Sturtevant Mill Co....460
Stupakoff Laboratories....416

Taylor Instrument Companies....429
Thew Auto Shovel Co....433
Thwing Instrument Co....424
Trautwein Dryer & Engineering Co....371

Union Chain & Mfg. Co....414

Veritas Firing System....430
Victor Balata & Textile Belting Co....449

Watt Mining Car Wheel....419
Webner, F. E....445
Weller Mfg. Co....370
Wood & Co., R. D....437

Youngstown Steel Car....427

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

History Repeats Itself: Why Not In This Case?

AT THIS TIME two years ago many of the country's leading business men were voicing a feeling that the autumn of 1915 would witness a break in the depression that had hung like a pall over the nation's building, and that a new era of prosperity would be ushered in.

Most of us will no doubt remember that the declarations of war on the part of Austria-Hungary, Germany, England, France, and Russia, in August 1914, started building operations on the toboggan, the low spot of which came in the summer of 1915. In that year July building permits showed a slight improvement over those of June, while August revealed greater improvement. This started an upward movement which took on considerable activity in September, continuing on until the end of the year which saw building in this country once more on a normal plane. Building has been booming ever since, 1916 being the record year for the nation.

We have said that building has been booming ever since—that is up until June of this year when signs began to manifest themselves that the summer of 1917 would not be as active as the previous year. The fact of the matter is that in some locations building may well be described as being "dead."

As in August and September of 1915, men are predicting that this fall will see a revival in building that will more than compensate for the short lull which has just taken place. The crops promise well, money is plentiful, and there is a great need for more houses, particularly apartment buildings. The stage is all set for a repeat performance of Building's stunt in the fall of 1915, so get your business ready for another era of prosperity.

It has been said that history repeats itself. In this case it might be well for the recorders of current events to take their pens in hand and get ready for another strenuous period in building circles.

* * *

Difficulties in Car Situation Fast Disappearing

WHILE CONDITIONS ARE RIPE for the ushering in of a new period of activity in building operations, and consequently, another rush season for the clay products manufacturer, news comes that the car shortage situation is showing very rapid improvement as a result of the combined efforts of the carriers and shippers.

The American Railway Association has issued a statement under date of July 31 that the unfilled car requisitions on American railroads, on May 1, 1917, amounted to 167,653 cars, while on June 30, this number had been reduced to 105,782 cars.

On May 1, the surplus cars, or cars at points where shippers had made no requisitions for their use, numbered 19,026. On June 30, the number was 28,646.

What is ordinarily termed "car shortage," that is, the excess of unfilled car requisition over idle cars on May 1, was 148,627, and on June 30, had been reduced to 77,144.

On August 27, Charles H. Markham, president of the Illinois Central Railroad said, "I think the railroads will be able to handle with reasonable promptness all the traffic offered them during the coming fall and winter. I see no reason for undue alarm, let alone hysteria.

"Tho the railroads have not been able to add greatly to their equipment of freight cars and locomotives, they have shown a tremendous increase in efficiency. This advance has been largely due to the co-operation of shippers. The shippers have largely cut down the time required to load and unload freight cars. They have also helped by increasing the size of the average load per car.

"Operating officials and trainmen in every part of the country have also struck a new gait; freight cars are moving many more miles per day on the average than ever before."

Things are certainly looking up. We have every reason to be optimistic and cheerful about the coming months.

* * *

Watch the Loading of Cars

IT DOES NOT necessarily follow because the car situation is showing improvement that clay products manufacturers should for a moment relax their efforts to increase the efficiency of the nation's transportation facilities. Continued good performance on the part of the railroads in the matter of increasing the volume of freight handled depends upon the continued co-operation of all shippers.

In an editorial appearing on page 1026 of the May 22, 1917, issue of *Brick and Clay Record,* an appeal was made to all clay products manufacturers to use every effort to load cars to marked capacity plus ten per cent.

The government is having a great deal to say these days with regard to what commodities should be hauled and when. As was set forth in the editorial mentioned, it would be difficult to convince the government that, with the exception of refractories, and perhaps drain tile, clay products were a war commodity. Sewer pipe, where it has been used in army cantonments has been temporarily granted such a classification, but preferential handling of this material would not apply in the case of pipe for normal building operations.

Certainly building brick, as well as face, enamel and paving brick could not be construed as war commodities, and in the loading of these materials the greatest care should be exercised to see that all cars possible are loaded to capacity plus ten per cent.

The Western Classification Committee recently took action which throws some light upon the trend of events. The carriers in that territory have suggested that the carload weight on common or pressed building brick, as well as salt-glazed, fire and paving brick be "marked capacity of the car." While every effort is being made by the manufacturers to prevent the enactment of rulings which will work a hardship upon the shippers of clay products, there is a constant expectancy of action in this direction on the part of the carriers. It does not take much deduction to see that the strength of the industry's defense, if such a crisis should develop, would depend largely upon the use which the manufacturers have made of the available car supply—that is, by loading in all possible cases to marked capacity plus ten per cent.

Every clay products manufacturer is urged to instruct his shipping department as to the necessity for maximum loading of every car shipped and also is warned of the advisability of keeping complete and careful records of every loading from now on.

These are not idle words. The situation is serious and needs the co-operation of every manufacturer to prevent the adoption of rules by the carriers which would cut off about forty per cent. of the shipments of some clay products, as, in the case of face brick particularly, the commodity is one which cannot always be loaded to the safe carrying capacity of the car on account of the limited number of brick often required on specific operations.

* * *

Where Should the Line Be Drawn?

THE SUBJECT of industrial exemptions in connection with the first draft is a very live one. Manufacturers are taking different attitudes on this question. Some are filing claims for discharge of their employes from military duty on the ground of industrial necessity, while others are announcing that they have or will make no claims for their employes. Still others are asking that certain skilled and trained men be exempted, and are not asking that men who can easily be replaced be discharged from the New National Army.

Of all of clay products, fire brick seems to be the only one that can be classed as necessary for the prosecution of the war, and it would therefore seem that in this branch of the industry claims for exemption would be the strongest.

The Editor is sometimes loathe to present his views on an important subject to the industry but would often rather hear the views of others. In this connection he has been privileged to receive a copy of an interesting letter from G. W. Greenwood, secretary of the United Fire Brick Co., Uniontown, Pa., to Porter S. Kier, president of the Refractories Manufacturers' Association, Pittsburgh, Pa., which follows:

> We have read with interest your letter in reference to exemption.
>
> Industries essential to the success of the government in its war program should not, of course, be crippled and we believe that is the view they are taking.
>
> However, in addition to our fire and silica plant we have a paving plant. Paving blocks cannot be regarded as very essential to the war unless some Irish contingent should want to handle a little Irish confetti in close quarters in which case we could supply a considerable quantity.
>
> Suppose two men are drafted, one from the paving plant, the other from the silica plant; that the silica man should be exempted and the paving man has to go to the trenches. Then suppose further that the paving man has had to stay on the job all the time, Sundays included, being given no opportunity to knock off and go home while the silica man quits at the slightest provocation and goes fishing. For example, some men stated some time ago that they never had any luck all year if they worked on Ascension Day which was the day they had chosen to fish.
>
> Mediations over these phases of the situation make the writer feel that exemption should only apply to the man in the brick business or any other business who has been working at fairly full efficiency for the past few months or that the exemption should terminate as soon as the favored draftee decides that he would rather sit in the shade and fan himself than to wheel brick.
>
> We feel that the exemption board should draw quite a line of distinction between the people who are *working* at fire and silica brick plants and the people whose whose *names are on the pay roll.*
>
> As in the case of dependents why not require three affidavits as to the *amount of work* the employe claiming exemption *has been doing?*"

We are inclined to agree with Mr. Greenwood in his views upon this important subject, but before forming a definite opinion we would like to hear from others of our readers who have been thinking about this matter and who have come to a definite conclusion. Not all of the claims for exemption have been passed upon in the first draft, and as good business men we should be looking forward to a second draft, so the subject is of immediate importance.

Write in to us today your own view of this vital question. The representative opinion of the clay-products industry will exert undoubted influence, and help effect the most satisfactory decision.

¶ Don't Wait for Business to Get Better; Get Busy and Do Something That Will Make It Better.

¶ Some Folks Have Abandoned Building Plans Because of Imagined "High Prices." Tell Them if They Are Thinking in Terms of Steel, Coal or Food Supplies, Their Talk Is Mere Chatter, for the Price of Brick and Other Clay Products Has Not Advanced to Anywhere Near the Comparative Heights of Other Commodities Thruout the Nation.

APARTMENTS

SCARCE *with*

GOOD REASON

Reports from Fifteen of America's Largest Cities Show That There is Great Need for More and Better Housing Facilities Now and after the War

"WHY BUILD NOW?"—This is invariably the answer that comes back to the inquirer who wishes to know why the prospective builder, whoever he may be, does not proceed with his plans. This is the answer which the Editor has received upon a number of occasions recently. It is the answer which a close friend of long standing gave him only last week—a man who has been prominent in the face brick and hollow tile industries and who has seen enough of life upon this planet to know what he is talking about.

VETERAN MUDMIXER REVIEWS BUILDING SITUATION

"Why just look here," he said, "let us analyze the situation—review it—and see just why there is every reason for not building now, and furthermore, why there will be no building boom until after peace has been signed in Europe."

The writer inclined his ear to the listening act.

"In the first place," the veteran said, "building in which steel skeletons are required is absolutely dead. It is hardly necessary for me to tell you that the present state of the steel market is the cause. For the same reason reinforced concrete operations are also at a standstill because they need steel bars.

"There is some factory construction going on of the mill type where brick and timbers are used. This is one bright spot in the situation.

"So far as residence construction is concerned, there are three types: first, structures costing ten thousand dollars and over, those costing six thousand dollars to ten thousand, and six thousand and under. The men who are able to build a twenty-five thousand dollar house are, for the most part, not stopping because of any abnormal conditions that may exist in the building material market. They have the money and are willing to spend it. There is little or nothing doing in houses from six to ten thousand dollars. These are usually built by the middle class and uncertainty because of war conditions has caused them to pause in any plans they may have for a new house. The third class mentioned, those costing six thousand and under depend upon the activities of the speculator. Now, the speculator must get a large loan in order to do business. In my city firms with mortgage money to lend have cut the percentage of the total cost of the building from sixty to forty. This has made it almost impossible for the speculator to operate.

APARTMENT CONSTRUCTION AT A STANDSTILL

"The construction of apartment houses is almost at a standstill because of the present prices of materials, as compared with existing rents, and it is impossible, so the apartment owners say, to obtain a reasonable return on their investment."

Now, the Editor was prepared to agree with his friend that there was little hope for activity in that type of construction which requires steel, much before the war ends: however, he could not agree with most of the other statements which were based upon the theory that after the war prices of materials would fall. This is the popular assumption but no one yet has been able to prove it as a fact. On the other hand, many have proved that there is every reason to believe that materials will advance to even higher prices and for this reason there is nothing to gain by delaying work now with the hope of lower costs later.

It is not possible, in this article, to take up each type of construction and thoroly discuss the prospects. It is, however, the intention to present some facts concerning the apartment situation which it is hoped may be of some value to the clay products manufacturer who is willing to put forth a little effort and spend a little money to get the right "dope" to prospective apartment builders who are holding up their plans because of a false impression.

SCHLAKE SAYS RENTS MUST GO UP

In the June 19, 1917, issue of *Brick and Clay Record* on page 1216 a quotation from William Schlake, president of the Illinois Brick Co., of Chicago, was given as follows:

"Rents are increasing all over the country and will in-

and HOUSES
RENTS RISING
to BUILD NOW

Claims That Apartment Houses Are Poor Investments Show No Strength in Face of Facts—Structures Started Now Should Finish in Profitable Market

¶ Rents Must Increase, and When They Do, It Will Remove the Last Objection to Immediate Apartment House Construction.

¶ Buy Some Space in Your Local Papers and Tell Investors, Contractors and Prospective Builders That Whether the War Lasts Five Days or Ten Years, the Nation Needs a Roof Over Its Head, and the Sooner Those Concerned Get Wise to It and Loosen Up, the Better.

¶ It Is a Case of He Who Hesitates Loses an Opportunity.

crease so long as prices continue to increase, and the investor who builds now will find by the time his apartment is completed, rents will have increased, so he will be able to make a fair interest on his investment."

It is in an attempt to prove the truth of Mr. Schlake's statement that *Brick and Clay Record* has secured reports from fifteen of its local representatives in as many cities of the United States, which show the true condition at each point. Among the cities from which first hand information has been secured are New York, Louisvile (Ky.), Detroit, Cincinnati, Minneapolis, Evansville (Ind.), Columbus (Ohio), Washington (D. C.), Paterson (N. J.), Cleveland, St. Louis, Syracuse (N. Y.), Reading (Pa.), Wilmington (Del.) and Memphis, Tenn.

Statements from these representatives, in whole or in part, follow:

RENTED BEFORE BUILDINGS ARE COMPLETED

All the better grades of finished residences and apartments are taken, in fact are rented before buildings are completed in New York City. This also applies to Brooklyn. Rents have been advanced in almost every case.

Regarding building material dealers' opinions as to prices in the immediate future and after the war, the great majority are of the opinion that the present prices will not change, and they expect them to hold, and possibly to advance, altho some of them think they have reached the high crest.

CLEVELAND APARTMENTS SCARCE WITH RENTS RISING

Vacant apartments in Cleveland at the present time, including those of all prices, amount to one-fourth of one per cent. of the apartments in the city, whereas at this time last year the vacancies averaged seven-eighths of one per cent.

It may be said that there is not a single apartment or dwelling place in Cleveland renting for $40 or less that is vacant, except just long enough to allow some one else to move in. On account of the great influx of population due to the mushroom growth of war industries which started last September, living quarters at reasonable prices are not to be had.

Since a year ago, or August, 1916, rents have increased from five to ten per cent. and real estate men in touch with the situation are positive that they will increase ten per cent. more by October 1, this year, on account of the high cost of coal and operation in general, coupled with the big demand. A number of very high-priced apartments continue for rent.

A large downtown agency which handles more renting properties than any other Cleveland concern states that the daily calls for living quarters that cannot be filled average one hundred and that on Mondays they run to two hundred or more. Suites at $20, $25 and $30 are in the biggest demand. There are very few $15 and $18 places left in Cleveland, and this is the more remarkable when one considers that of all the large cities of the country rents for a number of years in Cleveland have been cheapest.

There are about 4,000 apartment buildings in Cleveland of four suites and up. This is probably a lower average than the other large cities on account of Cleveland's rapid and efficient surface transportation which has spread the population out further and retained the single and double frame house longer than other cities of its size. Apartment houses of brick construction are, however, in demand from the selling standpoint; banks prefer to loan money on brick buildings, and renters like them. Owners find the upkeep less as they are more substantial and do not need to be painted.

The increased difficulty of handling the great population of Cleveland (about 1,000,000 including adjacent suburbs reached by street cars), has brought the apartment more and more to the front as a means of keeping the population within riding distance of the downtown section.

Many attempts are being made to solve the present housing problem but all that any single group of men can do is not a circumstance to the real problem, so constant is the increase in population. At least two companies are building workmen's cottages of lumber on a wholesale basis, and one company is endeavoring to solve the same problem by the use of hollow tile and stucco. But the thing that must be done before a real solution of the problem will be at hand will be some kind of a campaign which will bring out the money of the small investor who heretofore has always been depended upon to come into the building market when rents are high and the opportunity for returns on his money looks good.

"APARTMENTS WANTED"—NEW SIGN IN "FLOUR CITY"

"For Rent" signs will be replaced by "Apartments Wanted" after September 1, according to the best informed realty men in this city. The rental year here is September 1, and less than one per cent. of the apartments will be vacant on that date. The average number of vacancies a year ago at this time was four per cent. of the available living quarters.

Rentals have been advanced ten per cent. effective September 1. While this is partially due to the higher prices demanded for steam coal, the scarcity of living quarters and the normal increase in demand for apartments has a large bearing on the question.

"Minneapolis, the city of homes, is fast becoming like a continental European city before the war," said a prominent real estate agent recently. "Building records for the first seven months this year show 3,110 structures erected at a cost of $5,232,680, as compared with 4,081 structures costing $12,484,600 for a like period last year. Careful analysis of those figures show apartments and dwellings have decreased forty per cent. this year as compared with last year. There must be more apartments and more homes built if the natural development of the city is not to be very seriously retarded."

LESS VACANT HOUSES IN COLUMBUS THAN IN YEARS

Vacant houses in Columbus are fewer this year than they have been for several years, believes Samuel Neff, secretary of the Columbus Real Estate Board, who is constantly in touch with the rental conditions. Some classes of houses, of course, such as the very old ones, are plentiful, because there are few people who care for that class of house permanently. Rents, unlike everything else, have not yet advanced materially, he says.

The Arras Rental Agency reports that it has fewer vacant houses and apartments for rent at this time than it has had for eight years. After the flood of 1913, when families left the West Side by the hundreds for other sections of the city, there were more homes for rent than there are this August. Comparing the number of vacancies this month with those of a year ago it is found that there are less than half the number that were unoccupied at that time. The demand for homes to rent has not diminished in the last year, but has increased so that the shortage is keenly felt. Mr. Arras says that home owners have hesitated to raise rents while tenants are in the houses because they fear the tenant may move elsewhere. This is partly due, he says, to the lack of knowledge of rental conditions on the owners' part. The average rent for the last year has been about $18 to $20 for five and six room houses and this is the average other real estate men estimate.

Mr. Neff, of the real estate board, thinks that the average rent paid during the past year has been about $20 to $25.

One class of house that has fallen far behind the demand is homes for negro laborers. An immigration of negroes from the South that has been so great as to cause steps to be taken to check it has made it almost impossible to get houses to let to these people.

The need of a "Build Now" movement is readily seen by an examination of the building permits issued by the Columbus building inspectors' department. For the month ending August 1 the number of permits issued was very much below the number given out in July, 1916, and at the rate the department is now issuing permits the month of August will be a continuation of the decrease unless something happens to stop it. August figures are not compiled in the department until the end of the month. During July of this year 161 building permits of all kinds were issued as against 268 the corresponding month one year ago. The valuation was $268,735 in 1917 and $563,085 in 1916. This is a decrease of over sixty per cent. in permits issued and forty-eight per cent. in valuation. Of the 161 permits issued in July, 1917, only 34 were for dwellings or apartments and these had a valuation of $137,550. In the same month of 1916, one hundred and twenty of the permits were for dwellings and apartments with a total valuation of $416,000. The decrease, therefore, in the number of dwellings built was 28.3 per cent. with a value decrease of 33 per cent.

During the past year it is estimated by rental agencies and manufacturers generally that at least one thousand new families have come to the city because one of their members has secured work in the growing industries here. This would mean the addition of at least five thousand to the population of Columbus from families alone. In addition, it is believed that at least 1,500 other laborers and machinists, mostly unmarried, have come into the "Buckeye" capital to man the various lines of manufacture.

Thus it is seen that housing facilities for a larger number of families than during the previous year had to be provided. Professional house builders and contractors were rather busy earlier in the year, but with the high price of material and labor their activities have fallen off a great deal. Reports show that housing facilities will have to be increased in the near future if the ingress of families to the city is to be taken care of.

With but three-fourths the usual number of homes being built and only one-half the number of houses vacant as is customary, together with the growth that is constantly taking place, the need of a more extensive building program can be seen.

WAR MAKES SPACE SCARCE IN WASHINGTON

Because of the great influx of people into Washington, D. C., on account of the war, there are no vacant apartments to be had in this city for love or money. The war has brought to Washington more than 15,000 new government clerks in addition to the hundreds of "big" business men who are here to help the government during the war.

Real estate agents say that in August of last year there was a normal number of apartments to rent but this year none are to be had. During August, 1916, it is estimated that about 2,000 people moved from one apartment to another, but this year there were few changes.

Up to this time there have been no changes in the price of apartments. It is believed, however, that some of the rental agents are going to try to get about ten per cent. more for their apartments on new leases only. There is some doubt about their being able to do this because the government is watching every move they are making and there has been much agitation in the newspapers against raising rents.

The real estate men are hoping that the President will adjust the coal situation, which, if not remedied, they believe, would justify them in raising the rents at least five per cent. on that one item alone.

Many new apartment houses are being rushed to completion and the government has requisitioned several of them just about to allow tenants to move in, because it needs the room for clerks, new boards, and new commissions.

ACTIVITY IN APARTMENT HOUSE DEALS SIGNIFICANT SIGN

The percentage of vacant apartments and flats in St. Louis now is decidedly small when compared with the number that were idle at this time last year, according to information obtained from several of the leading real estate men.

While no actual bulk figures are kept by the St. Louis Real Estate Exchange regarding the number of vacancies, the list of the individual agents show that the unrented places will not run higher than five per cent. of the total number here.

The building of the larger type of apartments has been curtailed to a considerable extent during the last year, owing to the high cost of labor and building materials, despite the fact that those who have invested their money in such buildings are getting excellent returns.

There has seldom been a season when the sale and exchange of apartments, both large and small, at attractive prices, has been so lively. This, the relators say, is the best indication of what keen investors think of apartment owning.

The building of one, two and three-room apartments has gone forward at a lively clip ever since the spring season opened up and the suites have all been leased before the structures were finished. The number of apartments of this character that are going up here now is large, and the fall season will see them all occupied, the agents are confident.

The scarcity of desirable apartments has put the owners in a rather independent mood, and no concessions to prospective lessors are now thought of, whereas, a year ago a month's rent free was one of the attractions offered to tenants.

Apartments will be leasing at a premium here within the next thirty days, agents declare. This, they say, will be the result of the high price of fuel, a fact which in iself is going to keep apartment rents where they are now, if it does not send them higher.

Another factor which has filled the apartment section of St. Louis' residential district is the large number of people who have moved here from other cities during the last year. There have been several thousand of these.

Then, too, the large number of people who were accustomed to leasing apartments only for the winter months was greatly diminished. Pressure of business kept many persons tied down who during former years have spent the summer months elsewhere.

These, instead of giving up their apartments in the spring, kept them all summer and will continue to live in them during the coming winter season as well.

Real estate men also declare that the facilities offered in modern apartments have proved attractive features to the newly-weds.

The number of flats that are vacant is comparatively small. This is due to the fact that the population has increased considerably, and the new-comers who were unable to find suitable apartments have been compelled to take flats of the more modern type. Flat rents are the same now as they were a year ago.

UNRENTED APARTMENTS SCARCE—RENTS TEN PER CENT. HIGHER

Home and apartment house construction in Syracuse, N. Y., cannot keep up with the demand. Apartments to rent are very scarce with rents about ten per cent. higher than last year at this time. The average apartment will rent for $38 today while a year ago it could be had for $34 or $35. Apartments in the high class residential district go as high as one wishes to pay, from $50 upward. Even these are very scarce. Two real estate dealers said today (August 22) they had no apartments listed at all. Two years ago these same firms had hundreds.

Single houses for renting purposes are very rare. Houses of the semi-bungalow type have been put up by scores in several new tracts developed this summer and in many instances they have been sold and in some cases occupied before they were entirely finished. In rare cases where single houses are rented the price will vary with location from $30 up.

A wave of home buying swept over the city this summer following a general advance in rents from ten to fifteen per cent. by practically all landlords.

VACANCIES DECREASE, WHILE INQUIRIES INCREASE

All first class apartment houses in Louisville are full and have waiting lists. This has been the case for years. Cheap

(*Continued on Page* 432.)

* * *

An Oportunity Is Presenting Itself and Is Knocking At the Door

A quartet of years has rolled by since the last Clay Show in Chicago, but the memories of that great publicity power still linger. One often hears the inquiry: "I wonder if there will be another clay show?" No one seems to be able to answer this question with any authority, but the working of destiny may have prepared a reply in the letter which follows:

Brick and Clay Record,
445 *Plymouth Ct.,*
Chicago, Ill.

Gentlemen:

I want to say that I read your editorial entitled "Our Allies" in the August 14 issue with more than usual interest. It is, to say the least, very timely.

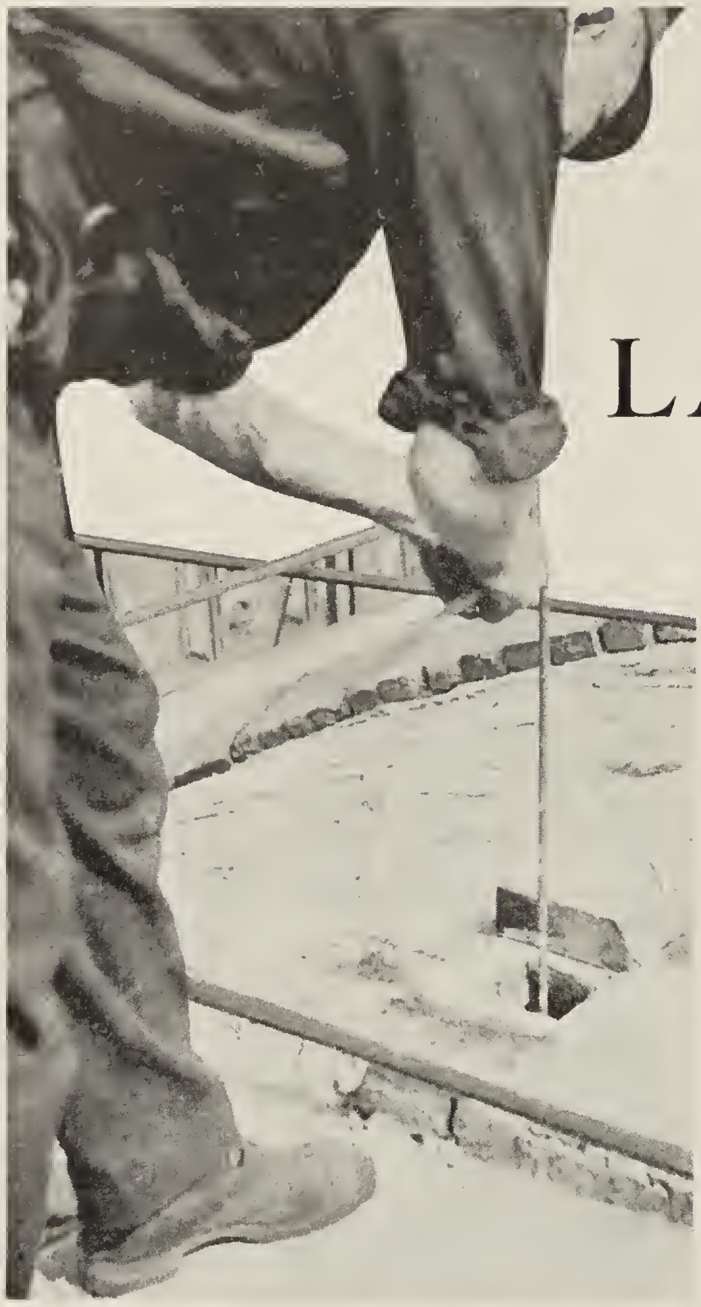
You might be interested in knowing that the Cement Products Exposition Co., which formerly conducted the big Cement Shows in Chicago, has decided to hold no show, and will probably be dissolved. Its assets and good will have been acquired by the National Exhibition Co. Instead of the usual Cement Show during the early part of the year an exposition will be held at which all building materials will be represented. This is, we believe, a big step forward in getting manufacturers of the various building materials to co-operate in educating prospective builders to use high grade materials. We hardly believe it is necessary for us to call your attention to the great opportunities for promotion in behalf of clay products which will be offered at this mammoth show. We want you to feel that clay products are going to receive the utmost consideration in the planning of the show and that no other material will be given any advantage over it.

"We wish to say in closing, that the spirit which you show in your editorial above mentioned is splendid and if it is indicative of the support which we shall receive from the industry we predict a great increase in the use of clay products as a result of the exposition."

Yours very truly,
NATIONAL EXHIBITION CO.,
L. F. Mead, General Manager.

When an opportunity like this presents itself it should be given the greatest consideration before definite action is taken one way or the other. We receive a great many opportunities but few of them are golden. If this is a golden opportunity let us treat it as such.

SPENDING *a* WEEK *at* ILLINOIS' LARGEST PAVING BRICK PLANT



Taking the Settle

"Steiny," of "Brick and Clay Record's" Editorial Staff, Writes His Friend, Joe, About His Visit to the Huge Plants of the Purington Paving Brick Company

DEAR JOE: I have a lot of stuff up my sleeve that I want to turn loose on you, not because I have any particular grudge against you, or because I am suffering from an attack of choler, but because I actually believe that the dope will be of great interest to you, especially since you have just recently been appointed superintendent of your plant.

Last week, I dropped my daily custom of wearing a panama, pressed pants and highly polished shoes and deserted the noisy atmosphere of rattling typewriters and whanging printing presses to don some old overalls and boots and again become a "brickyarder" on one of the largest and most efficient paving brick plants in the country.

When I returned to the office with a lot of good dope on the manufacture of paving brick and the operation of a 300,000-a-day plant, I thought sure that here was my chance to make a hit with my chief with a humdinger description of the plant I visited; one that would make every plant superintendent mentally devour the pages of *Brick and Clay Record* upon which it was printed and cherish and preserve the issue in which it appeared.

You can imagine the sinking feeling in the region of the ribs which overcame me when, after spending considerable time on it, I was handed back my manuscript with the following note attached: "Nothing doing on this plant write-up stuff. It's as dry as the Sahara Desert. What we want is some real live articles which will keep *Brick and Clay Record* in a class by itself among business papers when it comes

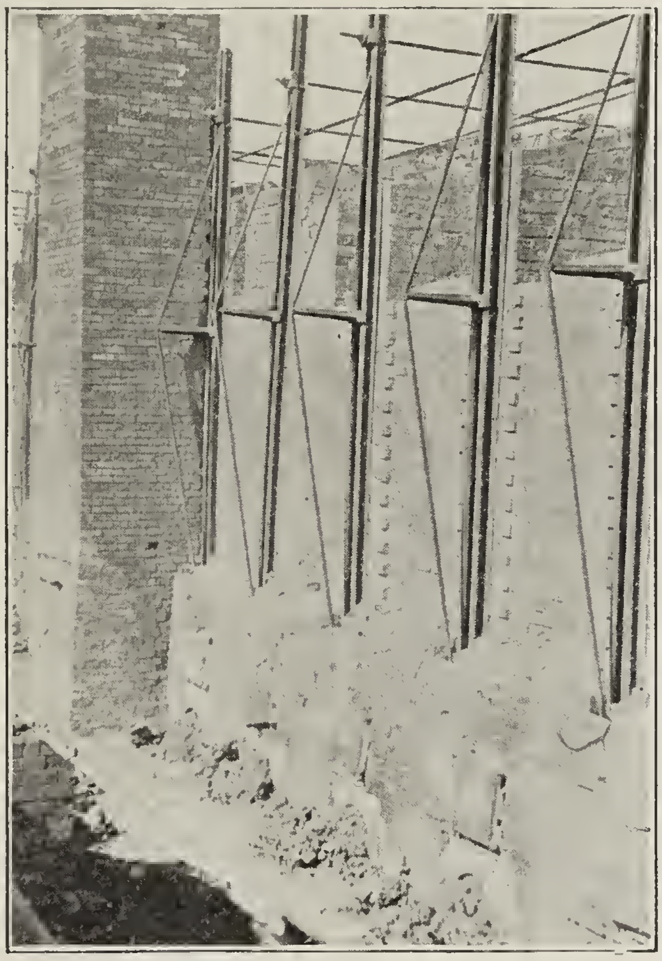
Double Rails Are Gradually Displacing the I-Beams Used in Bracing the Rectangular Kilns to serving its industry with snappy, instructive journalism."

It was a cruel blow, Joe, and almost made me think of home and mother. But rather than let the valuable material which I gathered nestle cozily back into my own grey cells for nothing but individual use, I decided that much of the information which I obtained might be of help to you in the prosecution of your new work.

Unlike the more or less standardized factories of other industries, clay products manufacturing plants, because of the many and varied physical conditions which enter into their operation, differ widely one from the other. Consequently, many of the things which I am going to write about will concern conditions which are quite unsimilar to those at your plant, but even so, I hope and believe that there is contained in this letter many points of interest and value which will help you to better discharge the duties of your new position.

I know your interest will be aroused when I tell you that it was the Purington Paving Brick Co.'s big plant, at Galesburg, Ill., that I was on, and that you will want to know how things are done at such a huge factory, or group of factories, since the plant consists of three different plants located very close together. Formerly these factories were operated by separate firms, but they are now under one management and one superintendent, the latter being assisted by several ceramic engineers who act as heads of the various departments. The combined capacity of the plants under normal conditions is 300,000 paving brick a day, but under present difficulties only approximately 245,000 brick are being turned out.

A Clam Shell Bucket Drops the "Kiln Fodder" Into a Small Car for Distribution



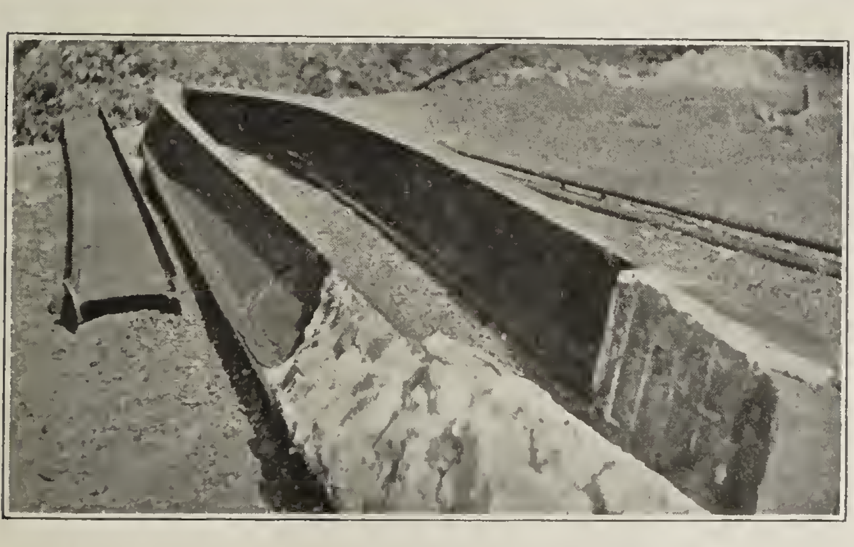
Fireboxes Below Floor in Pit Kiln Insure Thoroly Heated Bottom

LIFE IN A CLAY PLANT "DUGOUT"

I spent the first day in the "clay hole," which is, without a doubt, one of the largest depressions ever made in the earth's surface by a clay product plant. The clay bank is blanketed with an overburden of soft, yellow clay varying in thickness from ten to thirty feet, under which lies from sixty to sixty-five feet of medium hard, gray shale. On the whole, the clay runs fairly uniform in quality thruout the bank, the chief impurity of the shale being sandstone, which occurs in lumps of various sizes scattered thruout the bank. This sandstone, most of which is caught at the bank, is not of a very hard variety and does not cause much difficulty in the fabrication of the ware. Say, Joe, you'd think that "Dame Nature" had paving brick in mind when she laid that material there. It's as pure as North Carolina kaolin compared to that stuff which we ran into when we were at Niggerhead.

The overburden is stripped in the winter and spring months by means of a large steam shovel having a four-yard capacity bucket, and dumped into a near-by hollow.

Here is some data on their blasting methods which I will give you just as I dotted it down in my notebook. A well driller operated by a seven-horsepower gasoline engine is situated on the top of the shale bank. Holes are drilled about forty-five feet deep every sixteen feet apart and about eight feet from the face of the bank. Two men can drill two holes in an eight-hour day. The amount of gasoline consumed by the engine is five gallons (surprisingly small). Every two or three weeks the holes are shot. In shooting, each hole is loaded with about sixteen pounds of forty per cent. dynamite and two hundred pounds of blasting powder. The hole is then filled with loose shale and not tamped.



The Above Picture Shows Twisting of I-Beams and Also Disintegration of Beam at Ground Surface

This latter practice is not in accordance with the one that the Professor of "Mining III" taught us, if you happen to remember that particular point from what you learned back in the days when we were attending university. You perhaps recall that the proper method would be to fill the holes up with clay and then tamp them well. However, perhaps the difference in procedure may be due to the fact that the holes at this plant are much deeper than those ordinarily drilled.

NOVEL WIRE INSULATION PREVENTS ACCIDENTS

The caps used to set off the explosives at this plant are insulated in a very effective manner. When several caps from one hole are connected to the lead wires, there is, as you know, considerable danger of connecting both wires from one cap to the same lead wire. To obviate this, a specially prepared cap is used, the wires of which are insulated with differently colored materials—one having a red insulation and the other white. In connecting these caps all of the red insulated wires are connected to one lead wire and all the white wires are connected to the other lead, thus preventing any premature closing of the circuit.

I always did enjoy watching a steam shovel work. To me it is a very wonderful piece of mechanism. Here the shattered shale is gathered by a one-hundred-twenty-ton, three-yard shovel and placed into wide, shallow, three-yard cars. I noticed a very good point in connection with the method of filling the cars. Only one stroke was required to fill the bucket. At any number of plants I have seen the shovel engineer, without cause, take two and three strokes to fill a shovel, thus losing time, wasting power, and shortening the period of service of the shovel. The shovel is moved forward about twenty-four feet a day and digs about twelve hundred to eighteen hundred yards of shale. In doing this amount of work, only five tons of coal are consumed.

There are two trains bringing the clay from the pit to the crushers, each one being made up of a steam locomotive and eight cars, one of which carries the clay to the number one plant, while the other conveys it to the number two factory. When the car next to the engine is to be filled, the engine is uncoupled and backs away about ten feet from the cars so that no damage will be done to it should any large lumps of shale fall out of the bucket or from the car. Two buckets full of clay are dumped into each car; the time consumed in loading one train is six minutes. While the cars are being loaded the brakeman watches carefully so that should any chains loosen during loading he can readily attend to them and hence prevent an accident which might occur later on.

ABOUT CLAY CARS

Do you ever have any trouble with your clay cars jumping off the track? The pit foreman told me that he contended with that problem for a long time, but partly overcame it by lengthening the draw-bar between the engine and the first car. Later on, however, an experiment was tried of coupling the engine directly to the car, and the results obtained were so satisfactory that this system has been employed ever since.

The cars of clay are brought to the foot of the incline which leads to the place of dumping. After a five-minute wait at the foot of the incline, eight empties are ready for the engine to bring back to the shovel. A man is stationed at the incline, whose duty it is to oil the cars and to break up any large lumps of shale that may be in the load, and, say, Joe, this bird has a cinch. Nothing to do but to sit in his little cabin and wait for the p. m. whistle to blow. However, in order to please the men tending the dry pans, he is kept on the job, but even so he could spend his leisure time at some odd job around the plant, in my opinion.

Two cars at a time are pulled up from the foot of the incline by means of a five-eighths-inch wire rope and a drum. After giving a signal to the men tending the dry pans, the cars are dumped by a mighty clever, simple operation: A heavy pipe is placed at an angle between the floor of the platform and the bottom of the car, and the car slowly drawn up. This causes the pipe wedged in between the floor and the car to upright itself and in so doing it dumps the box. Before dumping a chain is attached to that side of the car which is thrown into the air. By pulling the car up a few feet pass the dumping point this chain becomes taut and pulls back the box of the car to a horizontal position.

The clay is dumped into wide chutes, each of which leads to two dry pans, which are, by the way, the only crushing machinery used at the plant. There are four at the No. 2 plant and four at the No. 1 plant. Two of the pans at the latter plant grind the clay for the No. 3 plant. The dry pan chutes, which, at the No. 1 plant, are made of paving brick, and at the No. 2 plant of steel, are only large enough to handle a little more than one car of clay. At the lower end, the chute is divided into two smaller chutes, each leading into a dry pan. In each battery, the two pans are only ten feet from each other, from center to center, enabling one man to take care of both pans.

DRY PANS ARE ENTIRELY REBUILT

You would never recognize these pans as the same as those sent by the manufacturer; before being installed, they are entirely rebuilt, only the frame work of the original dry pan remaining. Every part is made stronger and as a result depreciation is considerably lessened and very little trouble is experienced from breakdowns, despite the fact that each pan handles sufficient shale for over 35,000 pavers a day. This, you will agree with me, is an exceedingly large amount of shale for one pan to handle in view of the fact that no other means of crushing is used.

Am I boring you with too much detail? I remember when looking thru my inspection trip reports after they had been corrected by our "dear Prof." I invariably would find the notation, "Written fairly well except for a lack of detail in parts." This, I believe, is true of many books and articles written on some subjects. They give good points, but lack detail which would make them of use to you or me in our work. Consequently, I am writing this, so that after reading it your mind will not be groping for more details.

After it is ground, the clay is carried to the perforated screens by means of a wide belt. As strange as it might seem, there were no storage facilities for ground or raw clay. I was rather surprised when the superintendent told me that at one time they used a storage shed, but tore it down because they found it to possess no advantages.

There are two machine rooms at plant No. 2, and one each at the other two plants. I spent considerable time in the machine room of plant No. 3, hence I am prepared to tell you some things of interest about this department. The pugmill was a whopper, being seventeen feet long. It was fed by a disc feeder, and, say, Joe, but that is a wonderful machine—absolutely puts the taboo on uncertainty about the density of the clay, and cuts down die troubles, too. The clay was pugged with hot water to improve its plasticity and its drying qualities. It was a single-wing auger machine with a steam lubricated die that shot out 70,000 wire-cut-lug pavers a day. A large twenty-two-pound iron roller placed about three feet from the die served to keep the column of clay from "buckling" up.

I BECOME A HACKER

At this machine room, five double deck dryer cars were being set simultaneously by ten men. Here is where I had a chance to give my muscles a good workout and to recall many fond memories of days shortly after leaving college when we were initiated into the clayworking industry alongside the off-bearing belt.

I took a man's place at the first car for a while and hacked brick on the lower deck of that car. Later, I went to the end of the belt where the hacking of the cars was completed and altho a couple of hours of this work proved to me that my muscles have softened just a trifle, it sure did feel good to be back in the saddle. The near rail of the loading track is about thirty inches from the belt, which is a good distance for best working conditions. A platform about one foot wide and about one foot high is built alongside the last half of the belt to facilitate the loading of the dryer cars.

One important lesson which might be learned in this department is to have all the men working uniformly in hacking the brick. If they do not work in unison the results are quite evident. One man working faster than his partner will get ahead of him, and thus at some time or other he will have to wait a few moments for his partner to catch up. By working faster, this man has taken enough extra brick off of the belt so that the man at the end of the belt will receive but very few. Now, when he slacks up and takes none off the belt the men at the end are rushed to such an extent that, in many instances, they are unable to take care of all of the brick, with a result that many of them go over the end. Such inefficiency is carefully guarded against at the Purington.

The belt which returns the brick that go over the off-bearing belt to the pugmill, is located under the floor of the machine room. This arrangement gives a great deal of trouble at times. Dirt and dust falling beneath the belt soon accumulates to such an extent that it stops the belt and the machines, causing a cessation of operations until this trouble has been remedied. Another bad feature of this system is that, since the belt lies under the floor, the dirt is extremely hard to get at.

DESIGN AND OPERATION OF DRYER

If I were to take the course "Ceramics IX" at school over again, I would draw a totally different dryer than the one that I designed. I would copy the design almost to every detail of the dryer employed on this plant. In place of an exhaust fan, the dryer is equipped with a sixty-five-foot stack, which differs from the ordinary stack seen on dryers in that it doesn't taper toward the top. The stack is divided into compartments of the same width as the width of each double track tunnel. Tunnels are built of such size that the walls and roof were only about four inches from the brick on the cars. The space between the brick on the two cars in a tunnel is only about six inches. Each track in the dryer has room for the storage of two cars at the exit end.

The draft is frequently tested with an anemometer so as to get proper and uniform conditions at all times. The temperature of the waste heat gases passing thru the dryer is measured by a pyrometer located at the entrance fan and is maintained at 350 degrees Fahr. constantly. Weather conditions seem not to have the slightest power to affect any great change in the dryer conditions.

Another feature of this dryer is its covering, which is an asbestos-cement preparation made into corrugated sheets resembling, even in its color, corrugated sheets of bright galvanized iron. It is supported by a wooden framework. This roofing material is fairly light in weight, is strong, very easily laid in place, nails can be driven thru it with ease, does not warp, crack or rust, needs no painting, and is fireproof. The roof or covering on the dryer at this plant has been in place for six years without a sign of wear. Apparently this is an ideal roofing material for dryers and other buildings about the clay plant. The roofing as well as the stack is shown in one of the accompanying photographs, which I am sending you.

An electric dryer car transfer truck conveys the cars from the dryer to the kilns. The setting gang consists of ten men tossing and setting the brick while three boys sprinkle the sand upon the brick while they are being set in place. The brick were set to thirty-four courses high and twenty-one stretchers wide. *(To Be Concluded in Next Issue.)*

LOWER PRICES PRESAGE GREATER ACTIVITY

COINCIDENTAL with the drop in the price of steel beams, Pittsburgh base, at the close of the week to 4 cents instead of 4.5 cents a pound, realty interstate and building contractors foresaw the first definite assurance of a possible revival in construction work, not only in this city, but thruout the whole country, says The Dow Service Daily Building Reports, of New York.

At the same time evidences were to be found to show that the present halt in price advances in other departments is reflective of the interest the government is taking in some of the basic commodities entering into the production of building materials. The price reduction in coal and the promised attention to cotton and paper, a survey of recent advances in the price of lumber and their relation to the stagnation of building construction in the east are combining to give the building investor an opportunity to come into the construction market on something like a favorable basis.

Price comparisons with current lists corrected up to August 25 and those of August, 1912, show very little difference as a rule. In almost every case where there is shown a sharp advance over quotations prevailing before the war, the gain is ascribable to higher cost of coal, increase in paper and cotton containers, wood barrels or advance in the carrying charges due either to higher cost of steaming coal or steel for machinery. Now that a definite base has been fixed for fuel and assurances are given that container material will receive the same attention, there are reasons to believe that the price of building materials has reached its peak for the present and that only an abnormal demand for building commodities calling for quantities in excess of mill stocks can force prices up again. What probably will be the peak of basic materials for some time and what may be called normal price levels unaffected by war conditions are compared in the following table:

Wholesale Prices, New York. For Retail Price Add 10 Per Cent., Plus Cartage and Labor

	August 25, 1917	August, 1912	Difference
Asphaltum, Bbl. per ton	$21.00	$15.00	$ 6.00
Hudson common brick, per M	8.50	6.75	1.75
Raritan common brick, per M	9.00*	6.75	2.25
Portland cement, 1,000 Bbl. lots	2.12	1.46	.64
Copper, sheet, f. o. b. mill, per lb.	.37	.1775	.1925
Glass (Discounts from Mfgrs. lists, 1913).			
Single strength, 1st 3 brackets	85%	90%	5%
Double strength, 1st 3 brackets	85%	90%	5%
Polished plate, 5 sq. ft. over	85%	95.5%	10.5%
Gravel, 1½ in.	1.25	.90	.40
Gravel, ¾ in.	1.35	.90	.45
Hollow tile (Fireproofing) f. o. b. P. A. Per M.			
4x12x12 Exterior	87.50	60.00	17.50
2x12x12 Interior	66.00	40.00	26.00
Lime, per Bbl. common	1.90†	.92‡	——
Lumber.			
Long Leaf, yellow pine (a heart rift)	62.00	54.00	8.00
N. C. dressed siding	46.00	26.50	19.50
Oak flooring, Quartered W. Clear	88.00	90.00x	2.00
Cypress shingles, per M	10.00	9.00	1.00
Sand, Washed, Cow Bay, per cu. yd.	.50	.45	.05
Slate, per square, Penna	8.75	7.40	1.35
Steel.			
Beams, Pittsburgh, base, per lb.	.04	.0135	.0265
Stone, crushed, 1½ in. trap, cyd	1.25	.85	.40
Stone, crushed, 1½ in. blue stone	1.15	.80	.35
Stone, crushed, Limestone, Indiana, cft.	.98	.85	.13
Tin plate	21.00	14.00	7.00
Zinc, No. 9 open, per lb.	.215	.12	.095

---

* (Nom.)
† (300 Lb. Bbl.)
‡ (200 Lb. Bbl.)
x (April, 1913.)

Current building material conditions are in a receptive state for new building work right now. The statistics of the National Terra Cotta Society for July show some falling off, but the trade sees possibilities of a return of activity. The inquiries are almost as large as ever, but after obtaining bids many owners have been laying over their projects awaiting the time when structural steel will drop. Prices on architectural terra cotta have remained normal for some months and the companies make no very serious complaint as to the scarcity of labor and so far have not had much difficulty in obtaining the necessary raw materials in adequate quantities. Most of the plants are in proximity to their materials and are not involved in transportation difficulties.

Possibly one reason for the proportionate increase in the use of architectural terra cotta for building fronts is that many plants are in or very near to the large cities and their customers have not suffered from the railroad delays that are involved in long hauls. The companies report that they are offering shorter time deliveries than usual owing to the favorable labor and raw material situations in their particular line.

FOURTH COMMON BRICK PLANT STOPS OPERATION

One of the plants of the Sayre & Fisher Co., at Sayreville, N. J., closed down on Saturday, making four common brick plants in the district supplying New York that have abandoned trying to manufacture brick for the present market. Not a single brick has this company been able to ship from this particular plant this year on account of the scarcity of labor. Brick reserves are going to be ample for this winter, but there will be practically no spring surplus even at the low rate of consumption prevailing at the present time.

Building stone interests expect a change upward in the price of their commodities amounting to practically 10 cents a cubic foot, if the Interstate Commerce Commission decides favorably on the increased rate asked for by two of the western roads. Practically all the other building commodities in the market are fairly strong, but there is a tendency to see what sort of a building movement will develop with the prospects of a decline in the cost of raw products. There is more cause for optimism in the building material market today than there has been for a year and a half.

⁂

Leon C. Goodman Appointed Army Captain

Leon Goodman, general manager of the Des Moines (Iowa) Clay Co., has received a commission from Governor Harding as captain of Company C, Iowa engineers, one of the several military units raised in Des Moines within the past two months.

Almost immediately after filling its roster the engineering company will be shortly ordered to Deming, New Mexico. Captain Goodman has had previous military experience and with his technical training is considered an exceptionally good choice for the appointment. During his absence on military duty his work with the Des Moines Clay Co. will be carried on by his associates in the office.

⁂

Cincinnati C. of C. Embraces Brick Club

The Cincinnati Brick Club and the Cincinnati Building Materials Exchange, two organizations which, between them, embrace virtually all of the leading material and brick firms in Cincinnati, Ohio, recently affiliated with the Chamber of Commerce, following the example of many other trade organizations. The Chamber offers a splendid organization for the use of its affiliated bodies, with every facility for meetings, record work, trade extension and so forth, and it has gathered together many of the trade associations of the city.

The Cincinnati Brick Club has been organized for several years, and went into the Chamber with its full membership and two new members as well, the latter being the Shorey-Willis Brick & Supply Co., and the Builders' Material Co. The Building Materials Exchange is a newly organized body, with twenty-five members, including, besides several of the brick concerns which handle cement and other materials, the leading dealers in sand, gravel, cement, etc. H. Serkowich, of the Chamber of Commerce, is secretary of both bodies.

⁂

Steiger Pottery Not to Be Rebuilt

It was generally supposed that the Steiger Terra Cotta & Pottery Co. was going to rebuild its plant in this city, recently destroyed by fire, but this plan has evidently been abandoned. The site is offered for sale and other steps are being taken toward the liquidation of the business. The present high cost of building materials and the difficulty in assembling machinery is given as the reason for not reconstructing the factory as first planned.

⁂

Management of Moscow (Idaho) Plant Shifts

The entire holdings of F. S. Shoesmith, former president of the Moscow (Idaho) Fire Brick and Clay Product Co., consisting of forty acres of land, and considerable stock, were purchased during the early part of August by John Nisbet. As soon as the transfer was made, he resold to Warren Truitt, treasurer; H. B. Mickey, newly elected president; A. S. Lyon, vice-president, and Thomas Hall, superintendent, four-fifths interest in the land and divided the stock equally among them.

The company accepted the resignation of Mr. Shoesmith as president and director and immediately proceeded to reorganize. Thomas Hall was elected to fill the vacancy in the board of directors, H. B. Mickey chosen to fill the president's position, and A. S. Lyon was made vice-president. Mr. Mickey had previously been assistant manager, while Mr. Lyon held a position on the board of directors.

This company is now manufacturing about 300,000 fire brick monthly and has orders in hand which will consume practically the entire output for the next six months, writes Mr. Hall. Practically all of its output is shipped to points on the Pacific Coast Plans are being formulated for an increase in the present plan which will largely increase its output.

⁂

S. A. Grobmeyer Recovering From Injuries

Stanley A. Grobmeyer, owner of the Carrollton (Ky.) Brick Yards, is recovering from injuries recently suffered when a corner of one of the kilns collapsed. Mr. Grobmeyer was standing on a wagon near the kiln and was caught under falling brick. A long gash was cut in the back of his head and he fell with his throat across the sideboard of the wagon. He suffered temporary paralysis of the larynx and was severely bruised over the body and limbs.

A huge clay shed is being erected by the Paducah Clay Co., at Benton, Ky., where it will store clay taken from its mines, and awaiting shipment to the markets. The shed will be 30x200 feet and will have a capacity of one hundred or more carloads of clay. The Nashville, Chattanooga & St. Louis Railway has just completed the construction of a spur track for the use of this company.

SOME NEW LIGHT *on an* OLD PROBLEM

Part II of the Winning Paper in "Brick and Clay Record's" Second Ceramic Students Essay Contest, Showing the Effect of Variation in Pressure on Specific Gravity, Absorption, and Lamination of Clay Wares, and the Power Consumed in Their Manufacture

By Burton T. Sweely, B. S. in Cer.
of Iowa State College

EDITORIAL NOTE:—Part I of this very valuable paper, appearing in the August 14 issue of BRICK AND CLAY RECORD, *dealt with the effect of variations in moisture content used in manufacture on the properties of burned clay wares. It exploded the time-worn theory that a brick made by the stiff-mud process, other things being equal, is of greater density than one made by the soft-mud process, and presented the results of extensive tests made on four Iowa clays, all of which proved that an increase in the water content of a clay, up to the point where it starts to form a slip, invariably is accompanied by augmented density of structure.*

In this, the last half of the paper which won for Mr. Sweely a complete set of the Transactions of the American Ceramic Society, is presented the subject of the effect of variation in pressure used in manufacture on the properties of burned clay wares. By careful and exhaustive experimental work, described herein, it was proved that an increase in the pressure exerted in the auger machine is productive of no beneficial results, and, in fact, serves to increase lamination and slickensides.

A QUESTION of vital importance in the manufacture of crude clay products is the effect of variations in the pressure used in manufacture on the properties of burned clay wares. The further question of the effect on lamination being of equal importance, an interesting field of investigation is revealed.

The literature upon the subject of the effect on the burned ware of pressure applied to a clay in the plastic state is meager. Parmalee, Transactions A. C. S., Vol. XVI, p. 194, using a Riehle compression machine, varied the pressure upon a clay of constant consistency by means of a small cup-shaped die with a tight bottom and close fitting plunger, from a few pounds up to several thousand pounds per square inch. No marked difference in the properties of the burned wares, due to the incompressibility of the clay and water, were secured.

The writer, therefore, was led to question the advisability of exerting high pressure upon clay in the auger machine, since most of the power is probably wasted and the formation of slickensides and laminations is increased.

EXPERIMENTAL WORK

One means of varying the pressure upon a clay of a given consistency is to vary the size of the die opening while maintaining the auger diameter constant. Our tests consisted of running the clay at a constant degree of plasticity thru a small auger machine, to which three sizes of dies of circular opening could be fitted. The back of the largest die was of the same diameter as the auger barrel, with a slope of 1/16-inch in 3 inches from back to front. All the dies were made with this slope, and were simply small drain tile dies with the core removed. The reason that a round die was used was because it was found that a solid circular column showed up lamination and slickenside defects better than one of rectangular section.

The data taken were the power consumed per unit weight of clay discharged, the volume of the wet column, its weight, and the water of plasticity. After weighing and measuring the column for each run, four sections two inches long were cut from each column, which, when burned, were examined for lamination and submitted to the usual absorption test.

The power consumption was measured by driving the auger machine, a small laboratory type, with a 10 h. p. D. C. electric motor and measuring the power by an ammeter and volt meter and wattmeter in the feed lines. With these data and the efficiency calibration curve of the motor, the power could readily be determined. The writer is indebted to Professor F. A. Robbins, of the Electrical Engineering Department of Iowa State College, for this portion of the work, as he took the meter readings and made all the necessary calculations for the average power per minute.

The clay used was a shale of average plasticity and was worked at its best working consistency, as determined by the judgment of the operator. The clay was pugged about five times after the last addition of water had been made, allowed to stand over night in a damp place to allow the mass to reach uniform conditions, and then pugged five times more before the tests were run. That this gave a very uniform consistency is seen by a glance at the column for water of plasticity of Table II.

Table II.

Diameter of column	Circumference of column	Section area of column	Average length of column discharged per minute	Average weight of column discharged per minute	Average volume of column discharged per minute	Average specific gravity of wet column	Average water of plasticity	Average H. P. for 1 minute	H. P. H. per ton of clay discharged	Ratio of H. P. H. per ton of clay	Friction area of column discharged per minute	Ratio of friction areas of column discharged per min.	Average absorption of burned samples	Lamination
in.	in.	in.^{2}	in.	lbs.	in.^{3}		Per Cent				in.^{2}		Per Cent	
5.65	17.75	25.07	19.91	35.83	499.1	2.01	19.5	.654	.607	1	353	1	15.3	slight
4.35	13.67	14.86	30.87	32.83	458.7	1.96	19.6	.653	.662	1.09	412	1.17	15.5	more marked
3.00	9.42	7.07	57.7	30.06	407.9	2.06	19.7	.765	.848	1.4	544	1.5	15.2	bad

RESULTS

A study of Table II shows that there is a decided increase in the power consumed per unit weight of clay discharged for each decrease in the size of die opening. The slight variations in specific gravity of the wet column as given in the column of specific gravities in Table II is easily within the limits of the errors of manipulation. It can be said then that the increase in pressure had no effect in increasing the density of the clay column.

The samples were burned in a small electric furnace in an eighteen-hour burn at 1,000 degrees Cent. (1,832 degrees Fahr.). Upon testing with a knife blade they were found to be just a little less than steel hard, and when broken showed complete oxidation in every case. The evidences of lamination in the broken samples were as shown in the table, being most pronounced for the smallest die and least evident for the largest.

The absorption of the burned samples given in Table II is the average of four determinations per run of one minute each, for the individual dies. It is seen that this property varies but slightly for the different dies. What variation there is can scarcely be attributed to the difference in pressure exerted on the clay, since it is in no way proportional, but is undoubtedly due to the impossibility of placing all the samples in the furnace far enough from the door to insure an absolutely uniform heat treatment. No appreciable variation in the absorption of the burned ware, therefore, is secured by the increase in pressure.

The friction area given in Table II is the area of the surface which has been in contact with the die. The ratios between these friction areas for the different dies, and the ratios between the corresponding H. P. H. consumed per ton of clay, shows that the power consumption per unit weight of clay is very nearly proportional to the friction area of the column discharged.

CONCLUSION

Variations in pressure produced by varying the size of a given shaped orifice on an auger machine, with a clay of constant consistency, produced the following results:

1. The specific gravity of the wet clay column did not vary.
2. The absorption of the burned ware did not vary.
3. Lamination increased as the size of die decreased, in all probability due to the increased friction area per unit weight of clay.
4. The power per unit weight of clay was found to vary almost directly as the friction area of the exuded column.

* * *

MINES OFFICIAL EXPRESSES HIMSELF CONCERNING *the* CLAYWORKING INDUSTRY

ADDITIONAL INFORMATION regarding the Ceramic Experiment Station established at Columbus, Ohio, and of which R. T. Stull has been appointed chief ceramist, has been obtained since the publication of the August 14 issue of *Brick and Clay Record,* containing the announcement of Mr. Stull's new appointment. The establishment of the station, which is to be under the jurisdiction of the Bureau of Mines and which will represent the ceramic industry of the country, was authorized by Secretary of the Interior Lane. Columbus was selected as its site because it is the capital of the state recognized as the center of the clayworking and allied industries and also because the bureau can work in co-operation with the ceramic department at the Ohio State University.

Director Van H. Manning, of the Bureau of Mines, in recommending that the subject of ceramics be taken up at this station said:

"No industry in this country offers more opportunity for constructive effort and new development than does the ceramic industry. Moreover, the clayworking and allied industries represent one-third of all capital invested in crude mineral industries and are, therefore, entitled to the same consideration as other industries now under study by the government.

"*However, the industry is unprogressive, largely on account of lack of technical knowledge.* The European research, upon which the progress of the industry has largely depended, is not now available. Moreover, this information is not always applicable to American processes and materials.

"In the ceramic industry the fuel consumed represents approximately twenty per cent. of the value of the wares produced, and as a rule a great deal of this fuel is unnecessarily wasted. Hence, the value of the fuel wasted is very large, and the lessening of this waste demands immediate study. Moreover, the manufacturing wastes due to faulty methods or practice are very great and at the present time there is no means of subsequently recovering this waste. It is believed that enormous savings can be effected in the clayworking industry, but the subject has never been adequately studied, because the necessary outlay has been considered too great for individual firms to make.

"Moreover, manufacturing processes which now endanger the lives and health of employes should be investigated promptly. Investigations upon a laboratory scale have proved inadequate for the preparation of process specifications such as the industries demand before they will adopt less wasteful methods."

Undoubtedly, it hurts just a little to be told by an outsider, high in public office, that we, as an industry representing one-third of all the capital invested in crude mineral industries, are backward and unprogressive, and are in urgent need of parental guidance by the government; that those who are engaged in the business of making clay products have not sufficient initiative to launch investigations to cut production costs, reduce wastage, and to determine more scientific methods of operation. It is a smash on the chin that produces a reeling sensation. And yet it is one which, upon more deliberate and serious consideration, reveals itself to be more fact than fiction.

There is little to be gained by taking offence at the somewhat defamatory statements of the director; or by losing our mental balance and rushing madly to the defense of our industry against such seemingly calumnious utterances. It is true, unquestionably so, that the lack of appreciation of the ceramic industry for technical knowledge and technically trained men has stunted its growth and hindered its development. The issue cannot be dodged. Possibly one of the most encouraging indications of the future development of the clayworking industry is its rapidly developing tendency to place the stamp of worth upon technical training to which it is entitled.

In firing his broadside, Director Manning undoubtedly aimed at the many rather than the few clayworking plants. It is undeniably a fact that the *average* clay plant is not a model of mechanical engineering—that its methods of operation are wasteful and that its practices are, in many instances, dangerous. However, it is true, on the other hand, that that same industry which embraces these less developed factories includes upon its roster the name of plants which can not readily be excelled in any of America's many industries for efficiency of operation and economical production.

The accusation of backwardness made by Director Manning is, in part, justifiable. The faults which he enumerates are indeed in need of correction, and, as he states, increased application of technical knowledge is the surest and quickest route to a permanent cure. Second to the need of technically trained men to overcome the evils pointed out is that of a freer interchange of information among the members of the industry itself; yes, of an inspection campaign for manufacturers the purpose of which would be to encourage every operator of a clay products plant to periodically visit other factories engaged in the same or a similar line of work.

We are not all originators, inventors. We cannot, all of us, maintain individual experiment stations and employ skilled ceramists, but we can and we should make an effort to keep in touch with the progress of the industry by keeping in touch with the other fellow's plant. When we see a particularly good method of operation in the machine room of another plant, or a machine which could displace two or three men, it does not require creative genius to adopt that operation or employ that machine on our own plant if conditions are similar—common sense is the only requisite. While the owner of the smaller and less developed plant stands a good chance to profit most by adopting such a progressive course, the operators of larger plants will find plenty to make such a program worth while.

A letter has just come to hand from the managing director of one of Canada's largest plants, under date of August 20, stating that his company was planning to make a large extension to its plant, but before doing so he and one or two other directors would take a trip thru the States and eastern Canada with a view to ascertaining the most suitable machinery and equipment for the new addition. He asks *Brick and Clay Record* to suggest a list of the plants which they might visit most profitably and lay out for him an ideal trip. The spirit reflected in that letter is a powerful indication some day the plant will fulfill the founders' dreams.

The subject may be a little time worn. At every convention we are urged to move about more in the industry in which we are engaged. We are reminded of the great value of visiting other plants. And we always drop back into the arms of lethargy.

Possibly the jab on the chin administered by the Director of the Bureau of Mines will be sufficient to awaken us to the need of action—to the necessity for proving that the industry is not unprogressive. And next to increased technical training, the most effective manner in which to advance the industry is by adding your knowledge of machines and operations to that of the other clayworkers in your district and outside of it, and utilizing the sum total of intelligence to perfect your plant.

* * *

Ohio State Paving Brick Plant to Reopen

After being idle since last fall the state brick plant at Junction City, Ohio, will be started at once and run at full capacity. This is the result of an arrangement just made between Governor Cox, members of the State Board of Administration, Warden H. E. Thomas and members of the State Highway Advisory Board.

The plant has a capacity of 28,000 brick a day and as 375,000 brick are needed for a mile of highway of ordinary width the state will be able to furnish every month enough brick for two miles of road. The state already has on hand 1,300,000 brick of which 500,000 will be furnished the Ohio State University. The remainder will be used on the New Lexington-Athens highway.

William McClain Arehart, of Roseville, has been appointed by the board as superintendent of the plant at a salary of $3,000 yearly.

* * *

UNFILLED CAR REQUISITIONS SHRINK

Co-operation of Shippers With Railroads Effects Great Improvement

Reports just received by the Railroads' War Board show that an extraordinary improvement in freight car supply has been effected. These reports show that the excess of unfilled car requisitions over idle cars, or what is ordinarily but inaccurately termed "car shortage," was only one-fourth as great on August 1, 1917, as on May 1, 1917. The excess of unfilled car requisitions on May 1, was 148,627; on June 1, it was 106,649; on July 1, it was 77,682; and on August 1, it has been reduced to 33,776.

This result has been accomplished at a time when the railroads are supplying from fifteen to twenty per cent. more freight service with the same number of cars than was being given this time last year, for the railroads handled in July a tremendous increase in both government and commercial traffic. The movement of cantonment supplies alone occupied the full services of more than 30,000 cars. There was also an extraordinarily heavy demand for cars to transport food products, as well as materials to and from munition factories.

The result above achieved has been accomplished by co-operation with the railroads of shippers, regulating bodies, and the public in general. This co-operation has made possible the extensive loading of freight cars, prompter unloading, the elimination of a large amount of unnecessary passenger train service, and an opportunity generally to utilize the railroad plant efficiently. The aim at the present time is to put each car to the greatest possible use, to have empty cars placed where they are most needed, to prevent overlapping and unnecessary service—in other words, to make the entire railroad system of the United States the most effective possible transportation agency in winning this war.

However, the most severe strain is yet to come. The situation calls, not for relaxation of effort, but for closer co-operation all along the line. The crop movement is at hand, and the shipment of unprecedented quantities of war material of every kind will further tax the carrying capacity of the railroads. Beside this, the transportation of 687,000 men to the training cantonments, to be accomplished between September 5 and October 7, while not calling for many additional freight cars, will necessarily disarrange schedules and hamper the movement of freight trains to a considerable extent.

To offset the handicap and secure the maximum amount of service from cars the following suggestions are made to shippers and receivers of freight:

Promptly unload all cars received.

Load promptly all outgoing cars and release them immediately to the railroad.

Before arrival of the freight, plan for its immediate disposition.

Do not order special types of cars when ordinary types will serve.

Eliminate use of railroad equipment when tonnage can be handled by motor trucks or wagons.

Load all cars to their full carrying capacity.

The Commission on Car Service of the Railroads' War Board points out six ways in which the loading of cars to their full capacity can be achieved, as follows:

By more careful supervision of loading.

By producers and buyers agreeing to disregard established trade units and increase the units as a war measure.

By waiving rights in regard to minimum weights under tariff regulations.

By buyers increasing their orders so as to fill the car, and producers disposing of their output on a basis of full carrying capacity of equipment furnished.

By buyers who can not handle larger quantities clubbing together with other buyers to make up full capacity cars.

By showing customers who desire, merely as a matter of convenience, smaller units than maximum how they can help the general situation by enduring inconvenience.

* * *

Peoria Yard Burns Last Brick

The last brick to be made at the Giles Brick Yard, has been burned and the entire property, as soon as the kilns and buildings are torn down, is to be divided into acre and half-acre lots and sold. The brickyard was established twelve years ago by Albert E. Giles, 305 Frye Avenue, and is just outside of the city limits. There are thirty-four acres in the brickyard property, fourteen of which have already been sub-divided into lots. The remainder will be divided in the spring.

* * *

Australian Concern May Locate Here

Allen F. Gulson, of Sydney, Australia, representing the Illiwitti Fire Clay & Brick Co., is in America to investigate and find if possible machinery to perform the work done in the past by laborers. He was recently in Dayton, Ohio, where he made a tour of the local factories, and states that there is a probability that his company will purchase a plant in Dayton, altho, as far as is known, negotiations for Dayton plants have not been started.

Mr. Gulson came to the United States from Vancouver, B. C., where he had spent some time after reaching the North American continent. The necessity for more machinery has resulted from the fact that the war has greatly reduced the supply of Australian workmen.

* * *

Large Increases in Coal Shipments

Reports just received by the Railroads' War Board show that the railroads carried 129,721 more carloads of bituminous coal from the mines in July this year than during July, 1916. This increase, which amounts to 20.4 per cent., makes available for consumption 6,486,000 tons of coal in excess of the amount that would have been available had the railroads merely duplicated their July, 1916, performance. Thru co-operative effort, however, and by giving preference to the movement of coal, the roads that handle the bituminous product loaded 764,965 cars last month as against 635,244 cars in July, 1916.

The first problem to which the Railroads' War Board addressed itself, after being appointed to operate the railroads of the United States as a single transportation unit, was that of increasing the movement of coal and iron ore. The results so far achieved reflect great credit upon the effectiveness with which the railroads are performing their task. The fact should not be overlooked, however, that the country this winter faces greater demands for coal and other traffic than ever before in its history, and the railroads are now working might and main in the interest of national efficiency and welfare to utilize effectively every faculty they possess.

An increase has been achieved in the average daily loading of bituminous coal in July this year over the average amount loaded in June this year, loading an average of 30,599 cars a day in July as compared with 30,059 cars in June. There was an increase in the average daily loading in all districts east of the Mississippi and an actual increase in the number of cars loaded in July this year compared with the month previous in the low volatile fields of Pennsylvania, Maryland, West Virginia, and eastern Kentucky and the high volatile coal fields of West Virginia.

The most notable increase in the total shipments in July this year as compared with July, 1916, occurred in Illinois, Indiana, and western Kentucky. It amounted to 84 per cent.

In commenting upon the above-mentioned increased shipments and pointing out the gravity of the coal situation and the need for conservation of the coal supply, the "Railway Age Gazette" states that "in order that the supply shall be made adequate to the needs of the entire country, it is desirable not only that the production and transportation of coal shall be increased, but also that in all ways that are reasonably practicable, its consumption shall be curtailed. The railways themselves already have made a good beginning in this direction. They have reduced their passenger service at the rate of 20,000,000 passenger-train miles a year, and have other reductions in contemplation which will make the total reduction about 30,000,000 a year. It is estimated that this will effect a saving of about 2,000,000 tons of coal a year. The railways are the largest consumers of coal, and perhaps they should and will have to go still farther in curtailing their passenger service as a measure for the saving of fuel.

* * *

The next regular monthly meeting of the Eastern Red Face Brick Association, of which John H. Black is president, will be held at Lock Haven, Pa., on September 11. A. C. Tevling, manager of the Mill-Hall Brick Co., will entertain the members of the association at this meeting.

The AUDITOR CONDUCTS *a* PERFORMANCE *with* HIS SET *of* TRAINED RECORDS

Barnes Explains to the General Manager the Numerous Advantages of a Perpetual Inventory

By G. W. Greenwood, M. A. (Oxon)

Secretary, United Fire Brick Company,
Uniontown, Pa.

"SURE! I'll be only to glad to go over our Perpetual Inventory forms with you," said Barnes, as the general manager dropped in and stopped at his desk. "Have a seat and I'll get one of the blanks."

"Here it is," he continued, laying before the general manager a sheet ruled with several columns (see illustration). "With these you can tell the quantity of every brick or shape in stock, in kilns, or on the dry floor at any time. You can tell how many you have available for immediate shipment, or how soon you may expect to have any certain quantity for which inquiry is made. You can tell what and how many pieces are required to complete sets in the case of those which are sold in sets. You can tell the quantity made, or sold, for each month for years past, and thus get a line on how many should be kept in stock under normal conditions. You can tell the ratio of No. 1 to No. 2 twelve-inch arches which have been sold and thus determine if you should make up three times as many of the No. 1 arches as you do of the No. 2 arches. You can tell the losses from each of the different oper—"

"Stop, stop, Mr. Barnes," cried the general manager, holding up his hands protestingly. "At the rate you are going we will arrive at the conclusion a heap quicker if you will just start at the other end and state what it doesn't tell you. You remind me of my little boy. He saw an advertisement for a so-called pen knife which contains about fifty-seven varieties of tools, a pair of scissors, a file, a screw driver, a shoe buttoner, and goodness knows what else, and he has pored over that advertisement until he knows them all by heart, forward or backward. If I think of it some day I'll send and get it for him. But now to tackle this form of yours which you say will tell you exactly how many shapes were in stock and on the dry floor and in the car in the process of loading at thirty minutes past eight on the twenty-seventh of last May. Suppose you say the funny parts slower, in words of one syllable, and maybe I can grasp the process."

"All right," assented Barnes. "To begin with, the twenty-seventh day of last May was Sunday so all we would have to do would be to take the records as they stood Saturday evening. Lucky for me you didn't select some other date."

JULY'S RECORD

The general manager joined in the laugh, and Barnes continued: "For simplicity, let us make up an imaginary record, covering shape No. 173, weighing 140 pounds, and having a nine-inch equivalent of 20. We will of course want to know how many were on the dry floor, in kilns, or in stock at the beginning of the month, say the month of July. Suppose there were 100 pieces on the dry floor, 75 burning in kiln No. 2, 60 in kiln No. 8, and 200 in stock. This is inserted in the upper block of five spaces reserved for initial inventories. See?"

The general manager nodded as he watched the insertion of the figures named.

"Now we will want to know how many are made, how many set in the different kilns, how many removed, stocked and removed from stock. Let us suppose 250 are made; 90 set in kiln No. 5, 95 in kiln No. 1, and 110 in kiln No. 3; also that 60 are loaded directly into cars from kiln No. 2, 47 from kiln No. 8, and 50 from kiln No. 5; next, that 10 are put into stock from kiln No. 2, 10 from No. 8, and 10 from kiln No. 5; and, finally, that

"Stop, Stop, Mr. Barnes," Cried the General Manager, Holding Up His Hands Protestingly

205 are shipped from stock. All this information is now shown on the record opposite the respective dates, being posted daily from the records from the plant covering material handled in the different processes. Is this all clear so far?"

"Quite," said the general manager who had been fol-

JULY, 1917. SHAPE No. 173. 140 LBS. 20 EQ.

Date	Made	Set		Shipped		Stocked		Shipped	Remarks
		2	75						
Inv.	100						200		
		8	60						
1								175	
2									
3	100								
4									
5									
6		5	90						
7									
8				2	60				
9									
10						2	10		Loss 5 from Kiln 2
11									
12	150								
13									
14				8	47				
15									
16						8	10		Loss 3 from Kiln 8
17									
18		1	95						
19									
20		3	110						
21									Physical inventory shows 40 in stock
22									Loss 5
23				5	50				
24									
25						5	10		
26									
27									
28								30	
29									
30									
31									
T-1	250		295		157		30	205	
T-2	350		430				230		
Loss	5		8				5		
		5	30						
Inv.	50	1	95				20		
		3	110						

lowing closely the building up of the record. "It's just like keeping track of trains on a section of railroad track, with the beginning and close of the month as the ends of a division. You can tell at a glance where all the shapes are. Your question as to making yourself clear reminds me of my old mathematics teacher in college. Quite a jolly fellow, who would flunk you with the greatest good nature. He happened to get between the class and the board, and when one student called out, 'We can't see thru your head, professor,' he stepped aside saying, 'I try to make myself clear, but I can't make myself transparent.' You have succeeded in making yourself clear, at any rate. I notice, tho, that the second, third and fourth columns are double. Is this for the purpose of showing the kilns affected?"

KILN CONTENTS SHOWN

"You are right. To keep complete control of the movement of each shape and to forecast the possibility of making shipments, we must know what kilns contain the shapes under consideration. Then at the close of the month the records are balanced up like a ledger, when one wishes to know how a particular account stands. We take two sets of totals, one of the amounts made, set, and stocked during the month, also shipped both from kilns and from stock; the other set of totals including the inventories at the beginning of the month. Then we take inventories at the close of the month, just as at the beginning and insert these and compute the losses in the various operations. The closing inventories are of course carried forward to the beginning of the following month. As an extremely homely fellow once said, 'Have I made myself plain, or has nature already done that for me?'"

"You have certainly accomplished the job yourself, without any assistance from nature. But it looks to me as tho it takes a fiendish amount of work to keep such records," observed the general manager thoughtfully.

"Oh, it doesn't require nearly so much work as one would imagine, especially when you have a good calculating machine for performing the necessary additions and subtractions and striking the balance. You know we have twelve column machines so we can carry two of the columns at one time in the machine and strike the balance without clearing it."

"So this is how you could so rapidly determine the relative losses in the 12×6×3 and 12×9×3 silica shapes and show that the losses in one were no greater than in the other," continued the general manager as he studied the sheet carefully.

"Sorry to have to give evidence against your theory," said Barnes with assumed contrition as he started to carve a vine around his lead pencil.

ANOTHER JOB FOR BARNES

"I'm afraid I would not forgive you," retorted the general manager, "but for the way in which you showed up Mr. Baldwin in your records of 18×12×2 tile. How would it do to turn some of your calculating sharks onto the job of going over last year's products and finding the losses in each particular shape? Then in cases of unusual breakage, we could see if the price would cover it."

"Just what Mr. Baldwin was saying to me this morning," answered Barnes. "He sure is a progressives sales manager, in my humble opinion. Show him something of benefit and he'll adopt it if he has to scrap his most cherished ideas in the process."

"Yes," assented the general manager, "I feel that I am singularly fortunate in the forces—I was about to say the forces behind me, but I had better say the forces ahead of me, since it is more than I can do to keep up. By means of this system we can either make sure of getting a price sufficient to cover the added cost due to unusual losses in manufacture, or we can console ourselves when we are underbid by some other manufacturer who has no Barnes to give stability to his records."

Barnes grinned at the implied compliment as he bent over his carving which seemed to require that the point be carefully cut off, and the general manager continued.

"A few months ago we outlined a course which would ensure our always having on hand such shapes as sell for fair prices. Now as a correlative move we should determine what shapes we are best fitted to turn out from a manufacturing standpoint. I think Mr. Baldwin's idea is an excellent one."

PERPETUAL INVENTORY KEEPS TRACK OF SETS

"Do you know," said Barnes, looking up from his destructive occupation, "that's a nice habit you have of thinking up some good scheme and then attributing its inception to some of your advisors? But there is still another phase to these Perpetual Inventory records. Take, for example, a set of shapes consisting of seven arches and two skews, and which are almost invariably ordered by customers in complete sets. Rarely do they order either arches or skews alone. We carry such sheets, covering shapes which occur in sets, in the same folder. Suppose we fake up a case like this. By the way, would you mind lending me your pencil? Funny, but somehow I never can seem to keep a point on mine."

With an indulgent smile the general manager handed him a nice big fat pencil, carefully pointed, and Barnes made a table as follows:

	Arches	Skews
Stock	100	60
Kiln 7, off July 17	------	25
Kiln 6, off July 22	300	60
Kiln 2, fired July 20	150	----
Dry floor	150	5
Total	700	150

"Thank You, Father, For the Knife," He Called as Soon as He Was Within Hailing Distance

"You say a set is supposed to consist of seven arches and two skews?"

Barnes, already engrossed in an assault on the borrowed pencil, nodded assent.

"Then as I see it, your example, representing a tabulation from the Perpetual Inventory, would indicate that there were in the process of manufacture 100 sets of arches and only 75 sets of skews. Is this an oversight on the part of so accurate a person as yourself, or do such conditions actually exist?"

"They exist, sorry to say, right along," said Barnes, decidely. "Sometimes a stock order for 50 complete sets may be interrupted by an imperative order for other shapes, and the completion of the production order gets overlooked. Then your Perpetual Inventory acts as a sort of a rudder bringing ragged sets of shapes back to the course. Again, suppose Mr. Baldwin or Mr. Sellers should get an inquiry for 25 sets of these shapes for rush shipment. We look at these records. There are the skews all right in stock, but not enough arches. Perhaps they are in the next kiln. We look at the first kiln to be unloaded, No. 7. More skews, which will accordingly have to go into stock. Then Mr. Sellers blows up and wants to know why the different parts of a set of shapes cannot be kept at least within speaking distance. Mr. Baldwin waves his arms like a disorganized windmill and wishes he had words to express his feelings."

"Are conditions really as bad as your illustration would indicate?" inquired the general manager, running his fingers thru his sandy hair thoughtfully.

A SPECIFIC CASE

"Ask Mr. Baldwin if he remembers a case where a dozen pieces constituted a set, and the first kiln contained hundreds of pieces, without a solitary set among them, and the remaining pieces comprising the sets did not follow for two or three weeks. He was in a deuce of a fix trying to explain the situation to a customer who was in desperate straits for the shapes, especially as there appeared to be no reason whatever why the shapes could not have been set in approximately even sets in the first kiln fired. It appeared that there had been no oversight of the setters' work, and they just gathered the shapes up as they came to them."

"Of course, Mr. Barnes," said the general manager, "it isn't always possible for the operating department to handle production orders just as the sales department would like to see them handled, but we can keep in close touch with the situation and find what reason exists, if any, for breaking ranks instead of marching in solid columns."

(Continued on Page 431.)

* * *

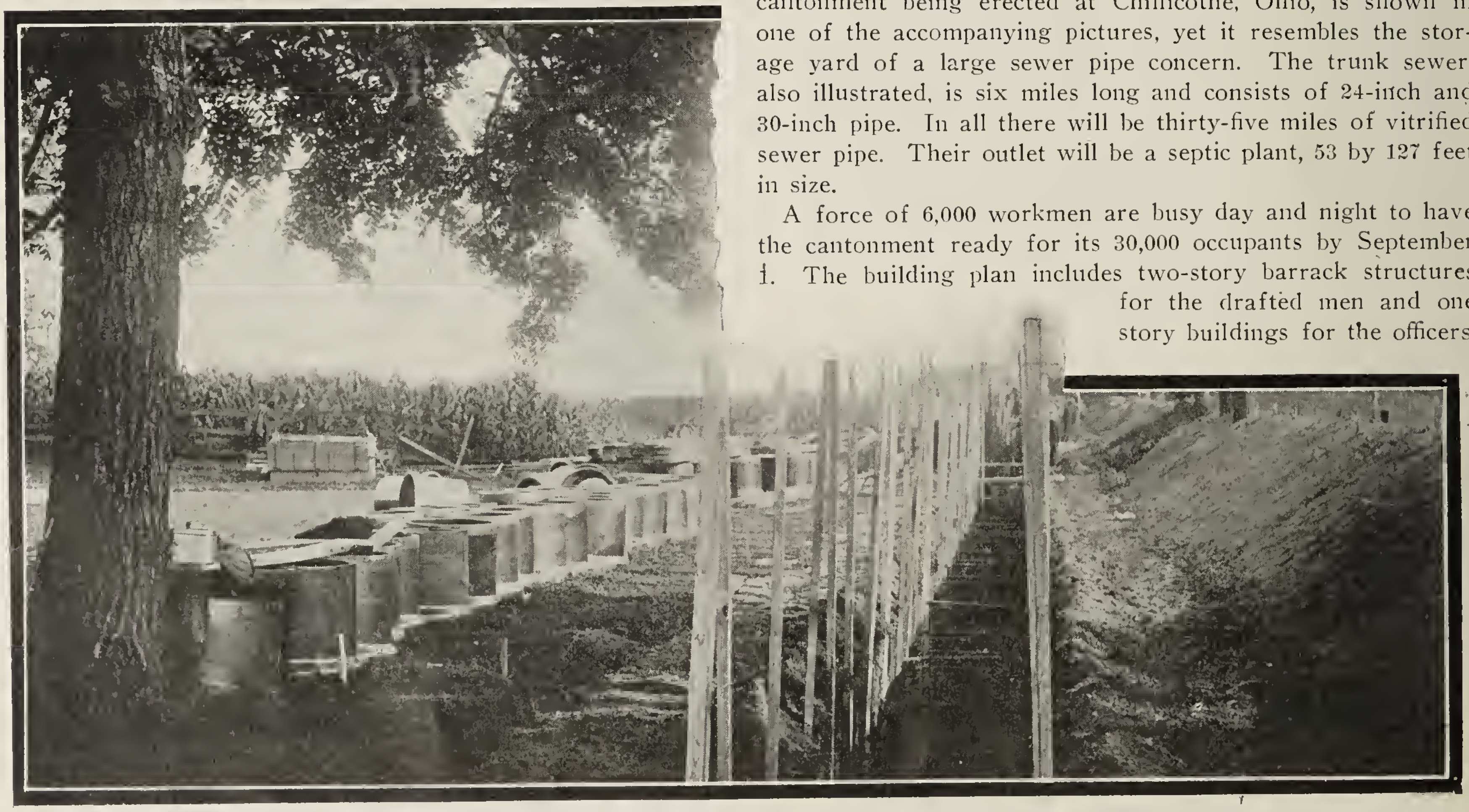
GOVERNMENT APPLIES SPANISH WAR LESSONS *in* SANITARY ENGINEERING *at* NEW CAMPS

UNCLE SAM has waited nineteen years to apply the lessons of the Spanish war mobilization, but how well he learned the lesson of that year is manifest in the preparations that he is making to preserve the sanitary standards of the government cantonments, where the new selective service army will learn the lessons of modern warfare.

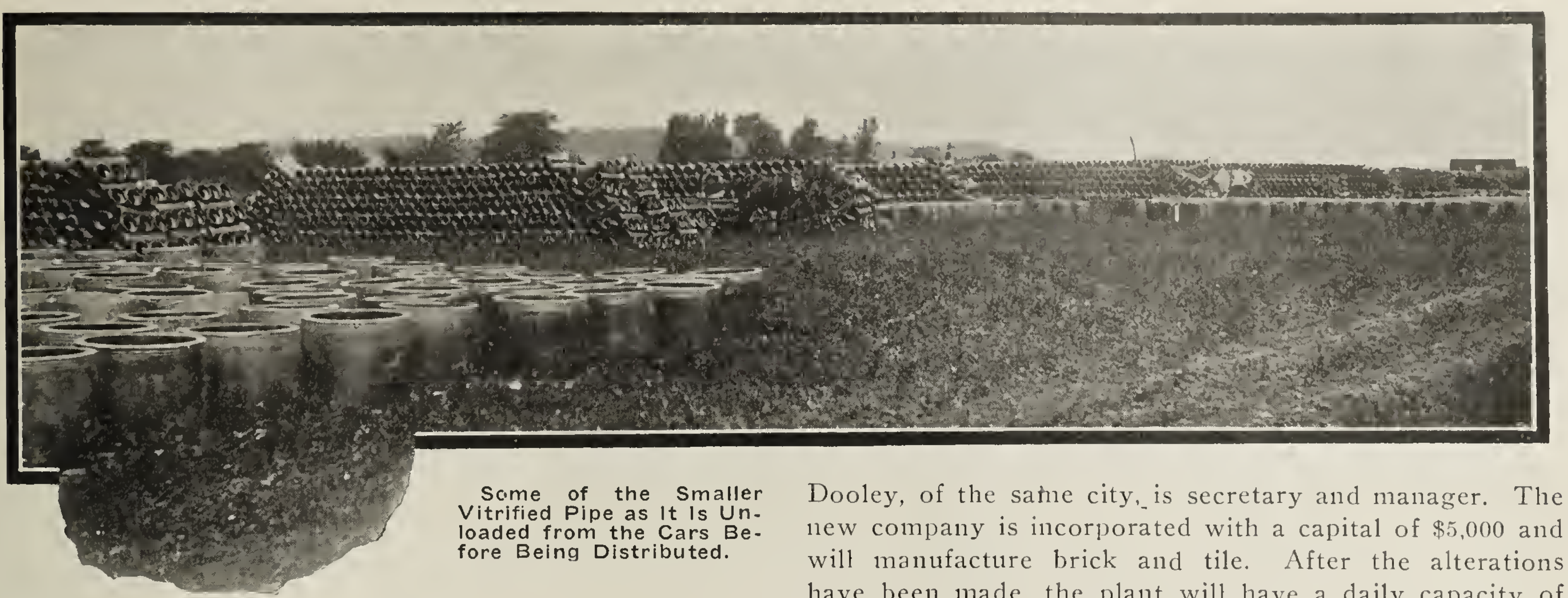
Loss of life by sickness in 1898 so far outran the loss of life in battle that medical officers still recall with horror the sick rolls of Tampa and Chicamauga, where inexperienced militia, under civilian officers, were hastily brought together into improvised camps. This year nothing is being left to chance, least of all, sanitation. The sewerage system of the typical cantonment would do credit to a permanent city.

Only about half of the vitrified sewer pipe used at the cantonment being erected at Chillicothe, Ohio, is shown in one of the accompanying pictures, yet it resembles the storage yard of a large sewer pipe concern. The trunk sewer, also illustrated, is six miles long and consists of 24-inch and 30-inch pipe. In all there will be thirty-five miles of vitrified sewer pipe. Their outlet will be a septic plant, 53 by 127 feet in size.

A force of 6,000 workmen are busy day and night to have the cantonment ready for its 30,000 occupants by September 1. The building plan includes two-story barrack structures for the drafted men and one story buildings for the officers.



Laying a Six-Mile Vitrified Pipe Trunk Sewer at the Chillicothe (Ohio) National Army Cantonment



Some of the Smaller Vitrified Pipe as It Is Unloaded from the Cars Before Being Distributed.

Portable cottages for the married officers and their families is a part of the plan that has recently taken shape, which will probably be put into execution.

The recreational facilities will be in charge of the Y. M. C. A., which will have no less than nine buildings on the grounds—libraries, billiard rooms, and picture shows are only a part of the things which they will offer as pleasing diversions to the soldiers during their leisure time. Civilians in the neighboring localities are also organizing a campaign of systematic hospitality to lighten the soldier's lot.

One million dollars will be spent on the hospital unit alone It is characteristic of the system in effect here that not one fatality has occurred among workmen and that minor injuries have received prompt and effectual army treatment. Three thousand pounds of meat, 2,500 pounds of bread, and 200 pounds of sugar are necessary in the daily ration of the working force, which gives some hint of the size of culinary operations in prospect when the new army arrives. Ten immense storehouses are necessary to handle these supplies.

Yes, it is a long step from 1898 to 1917 and the biggest part of the step is in the guarantee to the soldier's health; the safeguard against foul ground, contaminated water and noxious airs that is embodied in thirty-five miles of permanent vitrified clay sewer.

* * *

New Refractories Co. Makes Initial Shipment

The first shipment of brick from the new plant of the American Refractories Co., near Baltimore, Md., of which A. F. Greaves-Walker is manager, was made early in the month. The plant has been manufacturing brick for some weeks, but they have been held in the store rooms. The entire output of 30,000 brick per day consists of chrome and magnesite brick and is sold, for the most part, to eastern steel mills. The plant was originally intended to employ about 100 men, but 225 men are now at work.

* * *

Bricklayers Take Over California Plant

The old plant of the Carey Brick Co., at Richmond, Cal., has been taken over by the newly incorporated Allied Unions Brick Co., composed, in part, of the unions of bricklayers and allied trades, and business men interested in the manufacture of clay products. Many improvements will be made to the plant and newer machines and methods of operation will supplant those which have heretofore been employed. Jos. B. Cann, of Oakland, is president of the new company and E. E. Dooley, of the same city, is secretary and manager. The new company is incorporated with a capital of $5,000 and will manufacture brick and tile. After the alterations have been made, the plant will have a daily capacity of 140,000 brick, or its equivalent in tile. Operations will commence about September 10 or 15 with a force of thirty or forty men. Mr. Dooley is said to be an experienced clay products manufacturer and is in a position to conduct the affairs of the company in a profitable and progressive manner.

* * *

New Jersey Fourth in Brickmaking

New Jersey ranks fourth in the manufacture of brick and tile, according to figures issued recently by the Department of Conservation and Development, of New Jersey. In the year of 1915 its output was valued at $3,353,296, which was 6.45 per cent. of the total production of the country.

The statistics for 1916 just compiled show that last year's production was valued at $9,749,524, the increase of $1,396,228 being due chiefly to the increase in prices. In some lines the quantity produced has decreased.

Common brick numbered 328,419 M. and was valued at $2,366,614—a decrease in quantity of 21,015 M., but an increase in value of $421,808.

The number of fire brick produced was 37,891 M., valued at $1,162,794—an increase in production of 2,346 M., and an increase in value of $265,352.

The quantity of face brick produced amounted to 23,174 M.—a decrease of 466 M., and valued at $46,490, an increase of $84,711.

The value of architectural terra cotta was $1,818,052.

* * *

Potters Protest Against Embargo

That the freight situation in the western pottery district is very acute is shown by the action of the Chamber of Commerce of East Liverpool, Ohio, in taking the matter up with the War Department at Washington and also the officials of the Pennsylvania Railroad. The following is the text of the letter sent out by the Chamber in the interest of the pottery manufacturers in that territory:

"On August 11, the management of the Cleveland and Pittsburgh division of the Pennsylvania Lines West, the only steam railroad to this city, declared an embargo on all carload shipments 'in and out' of East Liverpool, and today the local freight agent sees no relief in sight.

"The reason given for this embargo is that shipments between Cleveland and Pittsburgh, the two terminals of this division are so heavy that they cannot accept carload shipments at intermediate points.

"This will result in a complete paralyzation of our pottery industry if continued much longer. In a short time our factories will have to cease operations and our people will be idle.

"The Youngstown & Ohio River R. R., a freight carrying interurban railway, terminates here, but does not connect with our factories, hence carload shipments over this line are impossible. We have been trying for a connection between these two railroads for some time, but to no avail. If we had it now, the present situation would be greatly relieved. West Virginia lies directly across the Ohio river, and shipments continue there without interruption. Can you do anything to relieve the situation?"

This appeal is expected to have the direct result of the federal government forcing the Pennsylvania Railroad to give permission to allow the Youngstown & Ohio River R. R. to build a connecting switch with the Cleveland & Pittsburgh R. R. at East Liverpool. Such a connection would increase the shipping facilities of the Ohio pottery district one hundred per cent.

* * *

STRAWS *that* SHOW *the* WIND

Brief Paragraphs from Many Points, Indicating the Market's Trend in the Light of Building Activity

JULY BUILDING PERMITS LIGHT

Building statistics for July make a very unfavorable comparison with those of the same month last year, permits taken out for new construction, according to returns received by "Dun's Review" from 100 leading cities, calling for the expenditure of only $53,068,111, a decrease of 50.2 per cent. as compared with July, 1916. While to a considerable extent this poor showing may be attributed to the abnormal advance in prices of lumber and practically all other materials, as well as unusual scarcity and high cost of labor, most of the loss is due to the pronounced falling off at New York City, where the total this year amounted to only $3,907,080, as against $50,523,867 for the same month in 1916, a decrease of 92.3 per cent. Altho every borough shows very sharp contraction, much the greater part of the reduction appears in Manhattan, which reports $953,500, against $45,472,250, due, however, to the fact that many plans were filed in July, last year in anticipation of a change in the building code.

The cities outside New York made a comparatively favorable exhibit, permits at the 99 centers reaching a valuation of $49,161,031, as against $56,068,275, a decrease of 12.3 per cent. Gains appear at 39 points, but, as a rule, the improvement is not especially great, the most noticeable being at Philadelphia, where plans were filed for a large public library. On the other hand, extremely sharp decreases occurred at Boston, Chicago, Milwaukee, Minneapolis, Seattle, and Washington.

⁂

"Business in the building lines is exceedingly dull and I do not see much indication of improvement so long as the money market continues as tight as it is now," said F. D. Meacham, president of the Meacham & Wright Co., of Chicago, and former member of the Cook County Board of Review. "The banks have tightened up on loans for building purposes to such an extent that no one dares to undertake any new building. Now and then there is a factory building and a few small permits are granted daily. Material men, however, find some uncertainty as to when they will get their money because of the hesitancy of the banks to make loans to contractors. The building business is practically at a standstill in Chicago."

⁂

Labor conditions at the brick plants in Ohio continue to grow worse. Because of the high price paid to coal miners, many of the yardmen are leaving for the mines. Others are being attracted to rubber factories in Akron and other cities by offers of high pay. Still others are going into the iron and steel business in the Pittsburgh and Youngstown steel districts. Taking it all in all there is a gradual decrease in the labor supply at the various plants and production is being curtailed as a result.

Shipping facilities on most of the railroads of Ohio have improved to a point where they are now generally satisfactory. All orders can now be moved promptly and little trouble on delayed shipments is reported. But with an increase in shipping facilities orders have fallen off and the amount moving is not very considerable.

⁂

Building and engineering operations in New England from January 1, to July 18, 1917, amounted to $109,021,000, as compared with $114,890,000 for the corresponding period of 1916, the highest previous year recorded.

⁂

Building operations in the Cleveland (Ohio) district, says the Federal Reserve Bulletin, issued on August 1, have fallen off a good deal as a result of the high prices of material and labor, and thru difficulty in obtaining money. There is no lack of demand for houses, but savings banks and other institutions lending money on mortgages are not in a position to supply funds as freely as usual for building purposes.

⁂

The best feature of the brick business in central Ohio is the demand for common brick for factory construction. That branch of the business is going ahead, despite the war excitement and high prices. In Columbus alone projects for a large factory for the Monitor Motor Car Co., and for the additions to several existing plants, are announced. The Monitor Co. will erect two large brick structures, each to contain 100,000 square feet of space. Later on several more units will be added to the plant.

⁂

Altho brick plants in the vicinity of Washington, D. C., are not suffering much from lack of coal, as they have been for sometime, they are suffering now from a scarcity of labor. All of the plants are not working full time on account of the labor shortage.

STOCK MOVING MOTORIZED

Truck and Three Trailers, With Ten-Man Crew, Replace Five Horses, Wagons and Eleven Men, Transferring Fire Brick, Sewer Pipe and Other Clay Products in Stock Yard of Laclede-Christy Company at St. Louis

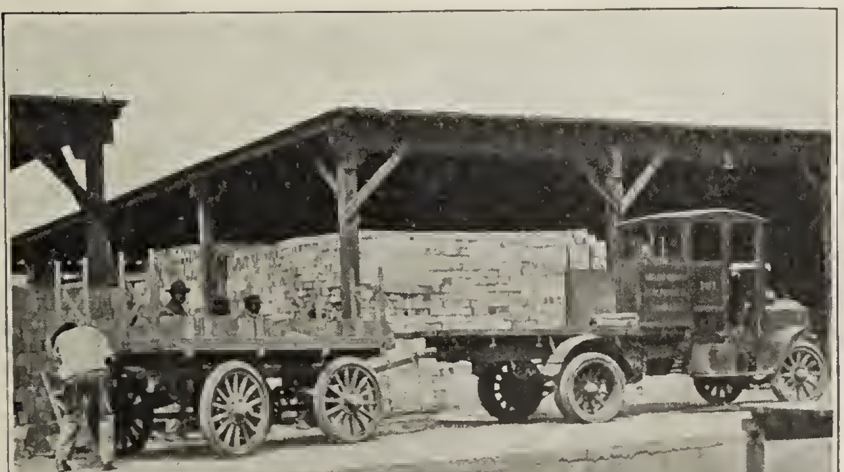
FOR THE PAST EIGHT MONTHS the Laclede-Christy Clay Products Company, St. Louis, Mo., has been using a truck and trailer system for transporting ware about its yards, instead of the former horse-and-wagon method of moving materials. Officials of the company say that "engineering and cost figures as to the efficiency of the innovation have not yet been compiled," but the mere fact that the motor truck with its three trailers has supplanted five horses and wagons illustrates the success of the gasoline haulage system.

NEW SYSTEM SAVES ONE MAN

Early this year the company purchased a 1½ ton truck and had made in its own shops three trailers. Since then the equipment has been in constant operation; has been doing the work formerly done by five horses and wagons, and has been doing it more satisfactorily. Besides supplanting the horses and wagons, the motor has also made unnecessary the services of one man in the gang.

The motor is a small but sturdy piece of mechanism. From the driver's cab its wagon bed extends about ten feet to the rear. Immediately under the end of the wagon bed is the coupling. The truck itself is never loaded with any of the products of the yard. Its sole mission is to furnish the move power for the trailers.

Each trailer is of virtually the same size as the wagons which were formerly used. At both ends of the trailers, however, is a coupling, making it possible to connect the trailer to its tractor, no matter which end of the trailer is the "near end." Because of the double-ended couplings, it is necessary to have both pairs of wheels capable of swinging, in order to effect the necessary turns. When the front pair of wheels is disengaged in order to allow the trailer to follow the tractor, the rear wheels are automatically locked by a pin, which operates only when the rear wheels are at center. A locking pin is placed at both ends and a simple turn of a lever will catch and hold either pair of wheels at center.



When the Trailer Has Been Loaded, the Truck "Calls" For It and It is Whirled to Another Part of the Yard

BOTH MEN AND EQUIPMENT KEPT BUSY

There being three trailers in use, one is loading, one unloading, and one in transport all the time. The truck runs continually. When a consignment of products is to be moved from one point to another, four men are stationed at the material pile to load the trailers, four men are assigned to the other end to unload as the truck brings the loaded trailers, and the third trailer is always passing to and fro.

No Time Wasted Until the Truck Comes Back; An "Empty" Is Always Left When a Loaded Trailer Is Taken

On the first trip a trailer is, of course, loaded. The second and third trailers remain at the hack. While the first one is being taken to the destination, the second is loaded. By the time the truck returns the second trailer is ready, and when the truck reaches the objective point with it the first trailer has been made ready for return. It is brought back empty to the point of loading, and the third trailer is then ready. This process continues in this way with all three trailers working all of the time.

Formerly, when the wagons were used, while the wagon was returning empty the time consumed in its passage was entirely wasted, as was the time of the horses while the wagons were loading. Now, however, half the time otherwise lost is saved.

Each trailer is capable of carrying a load of 3,000 pounds, a load which the truck has no difficulty in pulling. Two thousand five hundred pounds was very heavy, too heavy, in fact, to put on the wagons and impose on the horses. Fifteen tons a day per trailer are transported on the average by the truck, and an average day's work is always finished when the day is done. With the horse and wagon system a good day's work was never quite finished, and when it was, never quite satisfactorily.

The wagons required a driver and a helper, making, with the foreman of the gang, eleven men for the work. With the truck and trailers, four men are stationed at each end to load, and unload, which, with the chauffeur—required for the truck—and the boss, total one man less than formerly. These men say that where it formerly was a genuine exertion to transport the material, it is now a mere matter of "doing it."

NO DEFINITE FIGURES AVAILABLE YET

Because the experience of the Laclede-Christy Company with the truck and trailers has not extended over a sufficient period, figures on the work of the truck and its superiority over horses are lacking. Officials of the company state "the innovation is better than horses and wagons, but how much better we do not know."

The longest haul which the truck has to make is equivalent to about three city blocks. Brick, tile, sewer pipe, flue pipe, and the various other products of the company are transported with the trailers. They can be taken right up to the sides of freight cars and the material put aboard without any difficulty or waste of time.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

Pointing Out the Relationship Between the Classification of Freight and the Rates Charged

By Sydney A. Hale

SYNOPSIS—Freight rates directly affect the cost of every article purchased or sold. Regulation of interstate transportation charges and services is under the control of the Interstate Commerce Commission. The law which gives that body its powers guarantees to every shipper equality of treatment. To secure this legally published railroad rate schedules have a statutory sanctity and non-observance of their terms is an invitation to federal prosecution. The basis of all rate-making is the classification. In classifying freight, consideration is given to weight, bulk, handling, value, competition, risk, tonnage. The classification, however, is not a rate schedule. How the classification is connected with rates proper and the first steps in departure from the classification basis are explained in this article.

THE ACT TO REGULATE COMMERCE imposes upon common carriers subject to its provisions the duty of establishing in a prescribed mode the rates, whether individual or joint, to be charged for the transportation in interstate commerce of property over the lines, and the rates so established are obligatory upon carrier and shipper, and must be strictly observed by both.—United States v. Miller, 223 U. S., 599.

PUBLICITY MUST BE GIVEN RATE SCHEDULES

The corner stone of the Act to Regulate Commerce is publicity. That the idea of equal rights to all and special privileges to none may be fully carried out, the sixth section of the law provides that "the schedules printed by such common carriers shall plainly state the places between which property and passengers will be carried and shall contain the classification of freight in force and shall also state separately all terminal charges, storage charges, and all other charges which the commission may require, all privileges or facilities granted or allowed and any rules or regulations which in any wise change and affect or determine any part of the aggregate of such aforesaid rates, fares and charges or the value of the service rendered to the passenger, shipper or consignee."

Since the law requires every tariff to be open for public inspection, the law presumes that the shipper shall know the rates legally in force and holds him to strict accountability for the observance thereof. True he may request quotations of rates from a properly designated railroad official, and misquotation would subject the carrier to a fine by the government, but such misquotation would not relieve the shipper from his duty to pay the lawful charge nor form, standing alone, a basis for a change in rates.

Therefore, while the railroads stand willing to render all assistance possible in the interpretation and application of their rates, it is incumbent upon the shipper and receiver of freight, both for his own advantage and his own safety, to familiarize himself with the charges. While tariffs are to be construed according to their language, and not by the arbitrary practice or unexpressed intention of their makers, correct interpretation and the determination of the rate lawfully applicable upon a specified movement involve the consideration of a number of important factors. The first is whether the rate is a class or commodity charge. As has been explained, the classification is the basis of the rate structure today. Historically the statement may be open to criticism and the claim set up that the classification is the crystallization of existing practices born of necessity and custom, but in dealing with the question from its present practical application, the classification must be and is recognized as the basis for all rates.

CLASS RATES DEPENDENT UPON CLASSIFICATION

A class rate, as the name implies, is dependent upon the classification. The classification having taken care of the grouping of the thousands of articles commonly transported by throwing them into fifteen, sixteen or nineteen classes, the carriers, individually or jointly, make rates to cover the movement of these different classes. A class rate tariff bears on its face the notation that it is governed by a certain classification. In the tariff proper, instead of specifying commodities, a list of rates applicable to classes is shown. For example, a class rate tariff applying between New York and Chicago would show the following:

Rates in cents per hundred pounds from New York, N. Y., to Chicago, Ill.

Classes	1	2	3	4	5	6
Rates	78.8	68.3	52.5	36.8	31.5	26.3

John Doe, a jobber in New York, receives an order from Richard Roe, a retailer at Chicago, for 100 sets of chinaware. He refers to his official classifications and finds the following items:

Chinaware:
Silver deposit, silver plated or silver trimmed, in barrels or boxes..............................(L. C. L.)............D1
N. O. S., in hampers, not taken; in barrels or boxes ....(L. C. L.)................2

Richard Roe has ordered common chinaware, which is neither silver plated or trimmed. It will, therefore, come under the heading of chinaware not otherwise specified (N. O. S.) Illustrative of what has previously been said as to packing, it is found that shipments in hampers will not be taken at any rating, while shipments in boxes or barrels will enjoy second class rates. By reference to his class rate tariff. John Does knows that the rate will be 68.3 cents. Had Roe ordered silver trimmed goods, the rate would have been double first class, or $1.576.

CLASS RATES IN ABSENCE OF OTHER RATINGS

"A classification," said the commission in one of its most important decisions, "is a universal tariff from which the schedules of the individual carriers should not depart, except in cases marked by special conditions." Class rates, nevertheless, are used only in the absence of any other rates for the movement of traffic. The special conditions justifying the departure from the universal tariff are many and the tonnage moved under such conditions large. The special rates governing such movements are either commodity rates or exceptions to the classification. It frequently happens that an individual line is dissatisfied with certain ratings carried in the classification. Special conditions surrounding the traffic upon that road may justify higher or lower ratings than named in the classification. Instead of the individual carrier withdrawing the power of attorney given to the committee chairman and publishing a complete classification of its own, it will publish what are known as exception sheets.

For example, the committee classification may rate a certain article fifth class in carloads and establish a minimum weight of 30,000 pounds. The individual line may not agree to that, and in its exception sheet publish a rating of sixth class, minimum 36,000 pounds, for the same article. In the same way it may, if it choose, publish an exception to a rule in the general classification. In Southern territory a large number of exceptions are carried in classification itself, but in Official and Western territories, exceptions are published by the lines individually, jointly or jointly thru committees other than the classification bodies.

These exceptions, however, do not affect all traffic thruout the territory, but only on the line of the particular road making the exception and via such other routes that join with it in such variation from the classification. For example, Southern Classification No. 42 generally rates agricultural implements in carload lots at sixth class. An exception applicable via the Cincinnati, New Orleans & Texas Pacific Railway rates them Class L. The Southern Railway, except in Kentucky, makes no such exception. Therefore, upon a carload of agricultural implements moving from Cincinnati, O., to Rockwood, Tenn., via the first named road, and from Rockwood to Nashville, Tenn., via the Southern, in the absence of specific commodity rates. the shipment would be rated Class L to Rockwood and sixth class from Rockwood to destination. While an exception may be limited, as stated, to particular territories and particular roads, for the traffic covered by it, it takes precedence over the classification proper.

* * *

Rate Changes to Be Approved Before Filing

The Interstate Commerce Commission has approved the following amendment to section 15 of the act to regulate commerce:

"Provided further, until January first, nineteen hundred and twenty, no increased rate, fare, charge, or classification shall be filed except after approval thereof has been secured from the commission. Such approval may, in the discretion of the commission be given without formal hearing, and in such case shall not affect any subsequent proceeding relative to such rate, fare, charge, or classification."

This means that the approval of a proposed increased rate must be secured before the tariff containing it is forwarded to the commission for filing.

* * *

"Giff" Prepares Spread for Joy Riders

The telephone rang at the desk of William H. Gifford, manager of the brick department of the Wisconsin Lime & Cement Co., Chicago, the other day.

"Hello."

"This is the police station," came back over the wire. "We have a car here that might be yours. What's your number?"

"Blankety, blank, blank," replied "Giff."

"Well, I guess its yours, better come and get it."

The conversation ended.

"Did you hear about it?" said "Giff" as he swung in his chair, to a representative of *Brick and Clay Record* who had been absorbing the conversation—at least one end of it.

"No."

"Well," said "Giff" sheepishly, laughing, "you see it was like this. I took the family out last night in our car to do a little shopping. My wife had to buy some goods for the dressmaker and when she had finished we picked up a couple of baskets of fruit, some peaches and plums, and a box of candy for the children. We put all of the stuff in the back of the car and started for home, when one of the children reminded me that I had promised her a doll. We stopped at the store to buy the toy. My wife and children got out of the car and went across the street while I stepped over to look in a display window.

"I stood looking for a few minutes, then turned around to return to the car, when I noticed it was gone. After receiving some information as to the direction the speeders had taken, from a passerby, I got into a car with a gentleman and we started pursuit. After running down a few false clues, we gave up the chase, but the police found the car this morning.'

It developed later that everything but the fruit and candy in the car was untouched. These had been devoured by the joy riders so "Giff" provided a feast for a party of grateful sun-dogers. However, "Giff" is a good sport and can take as well as give. Maybe next time he will stop "rubber-necking" at diamonds and jewelry and watch his car.

⁂

Yepsen Made Officer of Fireproofing Company

The election of V. L. Yepsen as second vice-president and general manager of sales of the National Fireproofing Co., of Pittsburgh, Pa., has been announced. Mr. Yepsen has been with the company for fifteen years. He rose from the ranks to his present responsible position.

⁂

Industrial Plants Adopt Brick Paving

The enormous amount of business being done by some of the large corporations of the country at the present time seems to have awakened them at last to the value of good intra plant thorofares. The Deckman Duty Brick Co., of Cleveland, Ohio, which has watched this development closely, finds that the large plants are coming to consider brick as the only proper material for paving their interior driveways and delivery courts. Many large firms in the Cleveland district are using up to 100,000 paving blocks in these internal improvements. Among these firms may be mentioned the Standard Oil Co., the Peerless Motor Car Co., and the National Lamp Works of the General Electrical Co. The Standard Oil Co. alone took 200,000 brick last year.

In their manner of handling brick paving these industrial firms are setting an example to municipalities. They are building uniformly with an eye to caring for the maximum loads the pavement is likely to bear. Six to seven inches of concrete are placed under all their drives and courts.

⁂

Southern Association to Meet in Louisville

The September meeting of the Southern Hollow Tile Association will be held in Louisville, Ky., instead of at Birmingham, Ala., where the previous meetings have been held.

⁂

New Refractory Brick

The plant of the Siliconite Refractories Co., at Irondale, Ala., has just been completed. It represents a very substantial investment and was designed by Robert R. Zell, mechanical engineer, who is president and manager of the company. The product of this plant is siliconite brick which are made from the mineral siliconite, mined near the Seaboard Air Line in Calhoun County, and shipped to the company's plant at Irondale, where it is prepared by sizing, crushing, and mixing by special machinery.

The chemicals are prepared and mixed in another machine, added to the siliconite and again mixed; the combined ingredients are then discharged into a hopper leading from the second to the ground floor of the mill, where it is received in boxes which contain a sufficient quantity of the mixture to make five standard size siliconite brick. The brick machines press the brick under 40,000 pounds pressure on steel pallets, which are then placed on steel cars, holding 500 brick each, and run into curing ovens 120 feet long. When hardened, the brick are stacked in a storage shed alongside the railroad track, to be loaded for shipment. This is the only plant in the United States making siliconite brick, which are said to be highly refractory.

⁂

I. C. C. Suspends Pacific Tariffs

The Interstate Commerce Commission has suspended until February 28, 1918, the operation of certain schedules appearing in Southern Pacific Railway tariffs. The suspended schedules provide for the cancellation of carload commodity rates on terra cotta from Oakland and certain other California points to Grants Pass, Oregon.

⁂

Brick Paving and Making in Cleveland

Ralph Stoddard, secretary of the S. A. F. E., has been chosen chairman of the Secretaries' Club, an informal organization composed of thirty secretaries of Cleveland organizations. The first work of this organization has been the publication of a forty-eight-page book entitled "Cleveland—the City That Co-operates." Thirty thousand copies have been printed and distributed thru the various organizations.

In this book we learn that "Cleveland is the center of the paving brick industry of the United States. Five individual firms and corporations maintain paving brick plants within Cuyahoga County that employ in plant equipment and operation a capital amounting to approximately $1,500,000.

"Cuyahoga County is known internationally as the best paved rural section in the world, and brick pavement is used almost exclusively for its 400 miles of improved highways. There are, in addition, 600 miles of brick pavement in Cleveland and its municipal suburbs, making a total of 1,000 miles of brick pavement in the county.

"The manufacture of clay products in Cleveland is large and rapidly increasing. Fifteen million face brick, 30,000,000 paving brick, and 250,000,000 common brick are manufactured in Cleveland yearly, and these industries employ 1,500 men. Two hundred thousand tons of hollow tile are manufactured yearly.

"In the building operations of Cleveland there is used yearly not less than the equivalent of 383,000,000 common brick, all of local manufacture."

⁂

Building operations are proceeding at a very slow rate in the Cincinnati district, the feeling of conservatism caused by the war and the financial conditions growing out of it causing many prospective builders to postpone their plans indefinitely. There are occasional refreshing exceptions to this rule, but for the most part this is the situation which the trade has to face. The high prices of materials have a good deal to do with the reluctance of those who can wait to build, altho the argument used by the brick men, that the price of materials is bound to advance rather than retrograde is having some effect.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

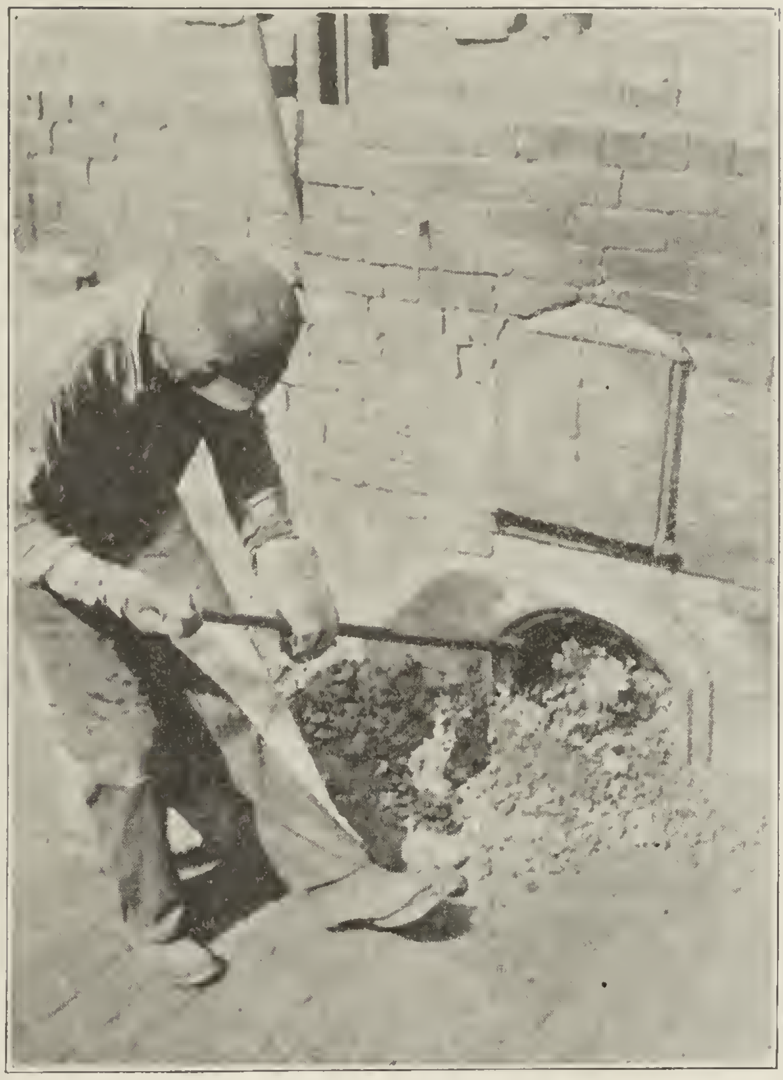
A Question of Draft

The tumbling of brick into fire pockets, the roaring of the gases in a kiln, or the burning of a hard section in the outer shell of the kiln setting while the interior is still soft may all be the result of too much draft, altho they are invariably attributed to too little draft.

Where you have a short blast of a flame such as is caused by having too much draft, the most temperature is developed near the fire boxes or bag walls. Owing to the difference in temperature of the brick and the gases the former will quickly absorb all of the heat from the latter and before it reaches the floor of the kiln the gas will have given up most of its energy. Hence, those brick located at the bottom of the kiln will not receive the necessary heat to properly burn them. Under such conditions an uneven shrinkage occurs in different parts of the kiln causing in many cases the tumbling of brick into the fire boxes.

With normal draft only partial combustion takes place at the fire box so that the gas continues to burn thruout the kiln giving as much heat to the interior part of the setting as to the outer shell.

Ordinarily the flame should not shoot up thru the stack. This is an indication of too much draft. In burning fire brick hard, however, the flame must be pulled thru the stack.



A CLINKERING APRON

Firing a kiln is itself a mighty warm job; but when it comes to clinkering, the mercury knows no limit. The number of burners who provide some protection for themselves from the heat, which often scorches their clothes and skin, is surprisingly small. The fireman in the above photograph, however, believes in safety first and has attached a heavy canvas protection to his left side to guard him against the terrific heat pouring out of the fireboxes and from the hot clinkers in the ash pit. The clinkering apron might be adopted on many plants to good advantage.

* * *

Is Your Scum Due to These Causes?

Despite all that has been said about scumming in the past one still finds a great many brick manufacturers who do not heed one or the other of the following precautions and hence are troubled with the aforesaid bugbear.

In watersmoking your ware do not delay in bringing up the temperature to 400 degrees Fahr. or you are not only losing time in burning, but you may be damaging your ware by allowing the condensation of steam on the cold ware at the bottom of the kiln. This condensed steam not only frequently softens the ware, but absorbs sulphur trioxide from the gases liberated by the burning of the coal thus forming sulphuric acid, which reacts with any lime present in the clay to form calcium sulphate, the chemical term for scum.

Another source to which a great many cases of scumming may be traced is in the waste heat dryer. The trouble which often appears here is that the receiving end of the dryer is permitted to get too cool, thereby causing a condensation of the vapor contained in the gases. Since there is considerable sulphur gas in the waste heat gases it is absorbed by the condensed vapor on the green brick, forming sulphuric acid and acting in the same manner as the condensed vapor in the kilns during water smoking as explained above.

A very thin layer of white scum showing immediately after the brick are taken from the kiln is due to sulphur in the coal and ashes remaining in the fire boxes after the damper has been closed. In this case there is no action in the kiln, but the sulphur simply settles upon the ware. This layer of scum may be eliminated by removing all the coal and ashes from the fire boxes upon completing the burn.

* * *

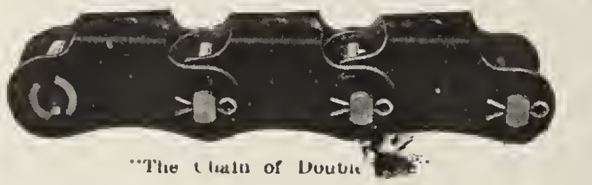
Removing Brittleness from Thermo-couples

Pyrometers having thermo-couples made of rare metals such as platinum and iridium, and rhodium alloys of

You Should Know of the Many Advantages of
THE POTTS SPECIAL
A Soft Mud Brick Machine
Self Striking—Horizontal—for Common and Fire Brick
Ask Us for Details and Names of Users
C. & A. POTTS & CO., Indianapolis, Ind.

MORE WORKING CAPITAL
or do you want to expand, to improve a good plant? We specialize in clay plant properties, arrange for the issuance and sale of Bonds. We have rendered aid to many plants. Write us about your needs.
F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILLINOIS

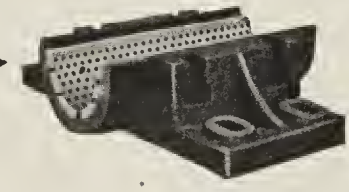
UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket



"The Chain of Doubl
Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used Sprockets, Buckets, Elevators, etc.—Send for Catalog
THE UNION CHAIN & MFG. CO., SEVILLE, OHIO

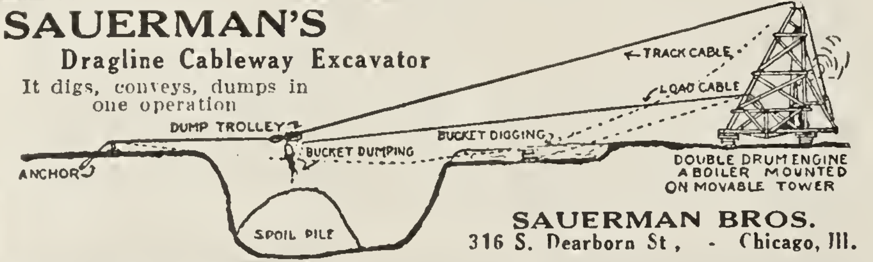
CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo, Michigan, U. S. A.

This Is the Way Your Bearings Look



To secure it you simply place a graphite sheet between the mandrel and the bearing box and pour in the babbitt. The result is a babbitt bearing impregnated with graphite spots. These bearings last from two to ten times as long on severe work.
Randall Graphite Sheet Lubricator Co., 816 W. Lake St., Chicago, Ill.

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.

CORK INSERT PULLEYS
BRAKE LININGS, CLUTCH FACINGS AND TENSIONS
overcome the worst conditions and produce operating economy.
SEND FOR CATALOG
THE CORK INSERT CO., 168A Federal Street, Boston, Mass.

TO STOP advertising to save money is like stopping a clock to save time.
—*The Little News.*

platinum, frequently show inconsistent results owing to a change in the chemical composition of the couple. These alloys of platinum and the platinum itself are affected in time by high temperatures and become brittle when frequently subjected to temperatures of 1,100 to 1,200 degrees Cent. (2,012 to 2,192 degrees Fahr.), due to the crystallization of the metal. This brittleness may also be due to the action of phosphorus, silicon, and sulphur on the couple or to reducing gases which cause the carbonization of the platinum and its alloys. The change effected in chemical composition naturally changes the coefficient of conductivity of the metal, and consequently temperature readings are made inaccurate. This is true because the temperature readings are co-ordinated with the resistance offered by the metal in the thermo-couple.

Often this brittleness can be eliminated by pursuing the following procedure: With the aid of a galvanometer of 15 ohms resistance, a rheostat, and a direct current connect up your thermo-couple and suspend it in the air. Using a current of about one-half ohm resistance and by means of the rheostat heat the wire to a good red heat. By doing this for a short period the brittleness or change in chemical composition of the thermo-couple will often disappear.

⁂

Cost of Stripping Overburden

A large number of workable clays and nearly all shales are covered with an overburden. Cases are rare where fire clays or shales occur on the surface except as outcrops on hillsides, ravines and cuts. In the manufacture of the cruder products such as common brick and drain tile, ware that is manufactured on a small margin of profit, an overburden of any great thickness cannot usually be removed profitably. The amount of overburden which can be removed to obtain the underlying clay or shale will depend upon the value and depth of the clay. In the majority of cases, it would not be profitable to remove a much greater cover than the thickness of the workable deposit. In the case of white burning clays, such as kaolin or paper clay selling at $6 to $12 per ton, a cover of from two to four times the thickness of the clay can be removed with profit.

The method of stripping like the method of winning the clay will be governed by the capacity of the factory or sale of clay. The cost of removing the overburden per yard is practically the same as that of winning the clay where the same method is employed in both cases and the hardness of the two are alike. If the overburden is a loose material like sand or gravel or a soft clay and the workable deposit is a hard shale, then the cost of removing the cover will be approximately two-thirds to three-fourths that of digging the shale. Where the cover is tough or resistant or where it is necessary to transport it a long distance the cost per yard for stripping may rise slightly above the cost of getting the clay, but such cases are rare.

In calculating the cost of the raw clay at the crushers the cost of removing the overburden must be added to the cost of digging and transporting the clay. For example, a deposit of shale twelve feet thick having a cover of glacial clay nine feet thick, assuming a cost per yard of seven cents for moving the cover and nine cents for moving the shale will make a final cost of

$$\frac{3\times7+4\times9}{4 \text{ yards of shale}}=14.25$$

cents per yard at the factory. The multiples, 3 and 4, signify the number of yards in the overburden and deposit, respectively, while the division, 4, signifies the number of yards of clay obtained.

The two most efficient means of stripping are by steam shovel and by hydraulics. In determining whether it would be advisable to install a steam shovel, the adaptability of such a machine for stripping together with the capacity of the plant should be considered. If, in place of the foregoing case of twelve feet of shale with nine feet of cover, the shale itself were twelve feet deep and on the surface, a plant of 36,000 brick daily capacity would hardly warrant the installation of a steam shovel. But the deposit of nine feet of stripping over this shale gives an amount of overburden equivalent to 27,000 brick, which would have to be removed. This then would give work to a steam shovel equivalent to digging sufficient shale for a brick plant of 63,000 capacity.

⁂

Safety—Eventually; Why Not Now?

Statistics compiled by one of the leading life insurance companies of America show that in the United States during the year 1916 there were approximately 34,000 fatal accidents; 600,000 serious injuries, and 4,000,000 other injuries.

Of this enormous number of accidents over one-half have been classified as "industrial" accidents or accidents occurring to employes of manufacturing industries and public service companies thruout the country.

Of the great number of industrial accidents, possibly fifty per cent. could have been avoided if workmen had not been careless; another twenty-five per cent. could readily be attributed to "thoughtlessness;" while an additional fifteen per cent. was caused by "undue haste" and "ignorance," thus leaving only ten per cent. due to unavoidable and unpreventable causes.

Now, rises the question: What can be done to prevent these accidents? To answer this question briefly yet effectively, a few safety rules have been laid down, which, if properly observed, will do more than anything else to prevent you, Mr. Workingman, from taking your place among the long list of injured.

READ THESE RULES CAREFULLY:

> Consider a cut or a scratch *equally as dangerous as a rattle snake bite.*
>
> Cleaning, oiling, repairing and adjusting machinery should not be done while machine is in motion.
>
> Do not allow projecting screws, keys, bolts or other projecting parts on moving machinery.
>
> Keep hand tools properly dressed and in good condition.
>
> Carelessness, fooling, horseplay and the like have no place in a well-ordered shop. It is to your interest to prevent it.
>
> Loose clothing has repeatedly been the cause of many employes getting caught in moving machinery. Keep jackets, etc., buttoned or properly fastened. *Torn or ragged clothing is a constant menace to your safety.*
>
> Tools or materials should not be allowed to lie in passageways. Tripping over such objects, especially when hands are full, has resulted in many accidents, some of a very serious nature.

Follow these rules and you will help hasten the day of fewer accidents.—*From "The Anchor," published by Thomas Maddock's Sons Co., Trenton, N. J.*

CRESCENT
BELT FASTENERS

Tired of having your belts break?
Write us for the Belt Man's Chart
No. 4 and learn how to join belts so
they stay joined.

CRESCENT BELT FASTENER CO.
381 Fourth Avenue New York

Do You Make Black, Grey or Speckled Brick?

If you do, you can get splendid uniform results, the kind your customers want, if you will use

CRIMORA MANGANESE

It is always dependable, producing "repeat" colors kiln after kiln. Why not order a batch? Do it.

Crimora Manganese Corporation
30 East 42nd Street New York

Blasting without using the
CYCLONE DRILL

is like hunting deer with birdshot. You can't possibly get good results.

We are ready to offer you facts and figures to prove that the Cyclone Drill will soon pay for itself.

Ask for names of users and Bulletin No. 4

The Sanderson-Cyclone Drill Co.
ORRVILLE, OHIO

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS

If your rate does not exceed five cents, the saving you make by installing a

HARDINGE WATCHMAN'S CLOCK

will pay for the cost of the clock the very first year.

Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

SIL-O-CEL
PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

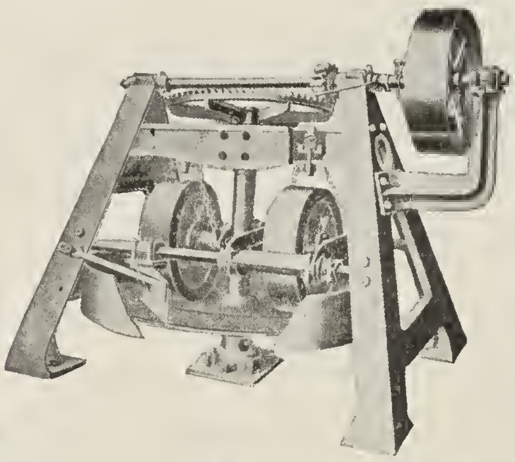
CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway CHICAGO Monadnock Bldg PITTSBURGH Oliver Bldg LOS ANGELES Van Nuys Bldg SAN FRANCISCO Monadnock Bldg
Write nearest Office for Samples and Information

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

THE EAGLE DRY PAN



Write for Prices
EAGLE IRON WORKS DES MOINES IOWA

Base Metal Couples and Low Resistance Instruments are absolutely un fitted for use on Clay plants.

We do not and we will not sell that class of equipment for measuring temperatures exceeding red heat.

STUPAKOFF PYROMETERS

for high ranges of temperature are equipped only with rare metal couples and high resistance galvanometers. They are dependable and we guarantee satisfaction.

The Stupakoff Laboratories
Pittsburgh, Pa.

QUESTIONS

A Two Cent Stamp May Bring You Advice That Will Stop a Waste, Improve Your Ware or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

Heat Values of Coal and Oil

829. *Iowa—We are contemplating the use of oil in our burning and would appreciate it very much if you could advise us where we could secure a table showing the comparative heat values, ash, B.t.u. of coal and oil, also anything that you might have or be able to secure, showing the adaptabilities of each to our locality.*

The following table is obtained from Kent's Handbook, and shows the relative values of petroleum and coal. It is based on the following assumed data: 20,000 B.t.u. per pound of oil; specific gravity, 0.885, which would mean that there were 7.37 pounds per gallon and that 1 barrel contained 41 gallons, or 310 pounds:

Coal, B. t. u. per lb.	1 lb. oil = lbs. coal	1 bar. oil = lbs. coal	1 ton coal = barrels oli
10,000	2.	620	3.23
11,000	1.818	564	3.55
12,000	1.667	517	3.87
13.000	1.538	477	4.19
14,000	1.429	443	4.52
15,000	1.333	413	4.84

From this table we see that if coal of a heating value of only 10,000 B.t.u. per pound costs $3.23 per ton, and coal of 14,000 B.t.u. per pound at $4.52 per ton, then the price of the oil will have to be as low as $1.00 a barrel to compete with coal; or, if the poorer coal is $6.26 and the better coal $9.04 per ton, then oil will be the cheaper fuel if it is below $2.00 per barrel.

J. K. Moore, in "Transactions of American Ceramic Society," Vol. XIV, page 801, gives some valuable data in his article on Oil as Fuel in Burning Ceramic Wares. In his general conclusion Mr. Moore states:

"Oil-burning on this specific plant was found to possess the following advantages:

"A. There is no cleaning of fires, no handling of fuel, no removal of ashes, no soot and dust.

"B. It was found possible to reduce the number of men in the ratio of seven to two.

"C. Oil could be stored in fifty per cent. of the space required for coal and ten per cent. of the space required for cord wood of equal heating value, based on the following equality tables of western fuels:

EQUALITY OF FUELS

Oil per bbl. at	Wood per cord at	Coal per ton at
$0.80 equals	$2.00 and	$2.80
0.85	2.15	3.00
0.90	2.25	3.15
0.95	2.36	3.32
1.00	2.50	3.50

"Three and one-half barrels of oil equals 1 ton coal; 2½ barrels oil equals 1 cord wood.

FUEL OIL

Car	Bbls.	Gals.	Wt. in Lbs.	Heat Units B. t.u.
1	238	10,000	79,000	1,461,500,000
	1	42	331.8	6,138,300
		1	79	146,150

Approximate Heat Units (B. t u.) Per Pound

Oil	Wood	Coal
18,500	5,000	12.000

and ANSWERS

Best Authorities in Every Clay-working Branch are Called into Consultation — Their Advice is Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

"D. The ease and quickness of oil-firing over that of coal and wood showed a possibility of a more even control and temperature, as shown by our burning curves.

"E. Due to a more equal control of heat in each fire box, there seemed to be no localization of intense heat in one spot.

"F. The percentages seemed to increase with the knowledge of manipulation of the burners.

"G. Due to the easy control of the burners it was noted that oxidizing and reducing conditions in the fire could be produced at will, and change from one to the other could be obtained on shorter intervals than with coal.

"The Vincent Clay Products Co., Fort Dodge, Ia., have been using oil in their continuous kiln for burning drain tile for the past three or four years. We believe that this type of fuel has proven satisfactory to the company in question.

⁂

Wet-Pan vs. Pugmill for Soft-Mud Fire Brick

828. *Illinois.—Our plant is equipped with two dry-pans and a combination pug and auger brick machine, and since we are about to begin the manufacture of soft-mud fire brick, we will require additional equipment. Granting that we grind our material in the dry-pans, which is the more satisfactory method of tempering the clay—in a wet-pan or in a pugmill? We are somewhat crowded for floor space and want to know if a pugmill would handle the material that the necessary wet-pan capacity would. Which method of tempering is the more economical in power consumption?*

I am satisfied that the two pans will grind sufficient material for 40,000 brick per day. We will use a six-mold soft-mud brick machine which we have on hand to manufacture the new product. We are using motors for power.

Answering the questions in your letter in the order in which they appear, we submit the following:

1. If you want a large capacity and do not need a thoro pugging for your clay the pugmill is undoubtedly better than a wet-pan; but if you want thoro pugging the wet-pan is the better machine tho its capacity is considerably less than that of the pugmill. The heavy mullers of a wet-pan squeeze and work the clay thoroly, producing a much better tempered material than is possible with the pugmill; the pugmill exerts no squeezing action to the extent that the wet-pan does, but simply mixes the clay and pushes it along.

2. A pugmill would easily handle the material for 40,000 brick a day. Many pugmills handle more than this amount of material.

3. The power consumption of the pugmill would be decidedly less than that required to operate the wet-pans you would require.

Your equipment consists of two dry-pans and an auger

Get This Can on TRIAL

Send for a Can Today

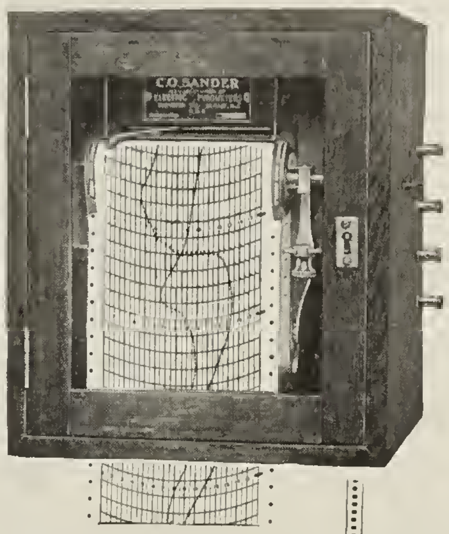
Keep your belts from slipping. Don't let them rot.

"SERO" Belt Dressing makes them efficient

"Sero" on your belts reduces the power consumption and prolongs the life of the belt.

Sero Specialty Co., Cleveland, O.

We also make "Sero" Gear and Cable Coating and Manila Rope Dressing.



SANDER PYROMETERS

Surprisingly low in cost, and yet well made, sturdy and accurate.

The smallest plant can use them efficiently and many dollars will be saved in coal and labor reduction. Ask how.

The Sander Instrument Co.
136 19th Ave. Irvington, N. J.

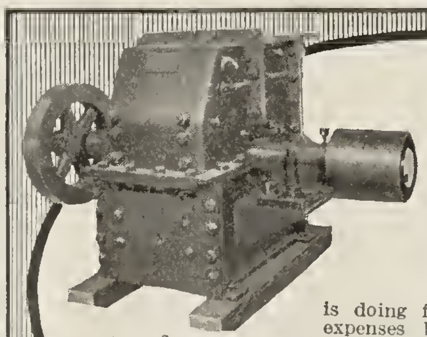
B. & B. Two-Bucket Aerial Tramway

requires but one man for its operation, reduces cost of hauling clay and shale to a few cents per ton.

Outline your haulage conditions and we will gladly estimate the cost and possible savings to you.

Ask for Catalog No. 16.

Broderick & Bascom Rope Company
St. Louis, Mo.



Cut your power costs

If you haven't heard what the K-B Pulverizer is doing for others in cutting down running expenses by using less power, let us send you figures on what you want to crush.

Built entirely of steel with manganese steel linings, the K-B will meet the most severe service requirements.

Write us for proof.

K-B Pulverizer Co., Inc.
86 Worth St., N. Y

KEYSTONE

PORTABILITY

THE KEYSTONE EXCAVATOR (MODEL 3) is a light traction shovel. It weighs ten tons, wheel-base, about ten feet. Rear wheels 55-inch in diameter with 16-inch tires. Front wheels 30 inches in diameter with 10-inch tires. It has two traction speeds and will go anywhere on its own power where you could take a loaded dump wagon.

SKIMMER BUCKET ½-YARD CAPACITY. Machine will load 250 to 500 cubic yards in ten hours, operated by two men. Replaces 25 to 50 hand shovellers, has powerful crowding thrust and will dig toughest fire clay. We will furnish names of brick manufacturers, cement plants, etc., using Keystone Shovels in pits under all conditions.

You save in **first cost, up-keep, repair expense** and **moving cost.** Get from one set-up to another in quick time. No planking necessary if ground is dry and solid.

Your Engineers agree that it is good business to install two light machines in place of one heavy unit. The explanation is **PORTABILITY!**

All operations illustrated in catalog, which will be sent on request.

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Carthage, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

USE "Brick and Clay Record" Classified Ad Columns because you'll get quick action.

Published every other Tuesday, it's the **newspaper** as well as the journal of the clay-products industry.

If you need help—have a machine for sale or are looking for a second-hand machine—a classified ad in "Brick and Clay Record" will bring results.

Eight cents per word for first insertion; six cents per word for each additional insertion.

BRICK AND CLAY RECORD

machine and you want to know what additional equipment you shall require to produce 40,000 soft-mud fire brick per day. A well known fire brick plant in Pennsylvania, using two nine-foot wet-pans and a standard soft-mud brick machine, easily produces 40,000 soft-mud brick per day. The clay at this plant is tempered in the wet-pans and dumped when properly tempered on to a belt which conveys it to the soft-mud machine where it goes thru the ordinary process of manufacture of soft-mud brick. The brick are taken from the soft-mud machine and laid upon the hot floor, where they are permitted to dry to a consistency approximating that of stiff-mud brick, when they are taken up, repressed, and then dried thoroly.

It is extremely unusual to find a pugmill used in connection with the manufacture of soft-mud fire brick; this machine is employed almost exclusively in manufacturing stiff-mud products.

* * *

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

Emmet Howard, sales manager of the Claycraft Brick Co., of Columbus, Ohio, has returned from a vacation trip spent on the lakes.

L. P. West, of the West Brothers Brick Co., Washington, D. C., has started on his vacation. He is making a trip in his automobile to Atlantic City and other resorts.

H. C. Moatz, treasurer of the Deckman Duty Brick Co., Cleveland, Ohio, spent the last week of August on a fishing trip at Lake Nipissing, Canada, returning after Labor Day.

E. Joseph Brockway, president of both the Brockway Brick Co. and the Brockway Brothers Co., brick manufacturers and dealers at Brockway, N. Y., died on August 10, Mr. Brockway was buried in Haverstraw.

A. H. Fairleigh, who has been associated for some time with the Louisville (Ky.) Builders' Supply Co., has received an appointment to the second Officers' Training Camp and is now with the men in training at Ft. Benjamin Harrison, near Indianapolis, Ind.

L. D. Binyon and James A. Hogan, of the S. S. Kimball Brick Co., of Chicago, were in Columbus recently looking over the situation and calling on local brick men. The S. S. Kimball Brick Co. operates the Union Furnace (Ohio) Brick Co. The visitors also attended a meeting of the Columbus brick men.

M. W. Younkin, of the Johnson-Porter Clay Co., McKenzie, Tenn., was treasurer of the local Red Cross committee during the recent campaign and the $1,000 which he sent in on behalf of his town has been acknowledged in a very complimentary letter from the secretary and treasurer of the Red Cross at Washington, D. C.

H. O. Joseph, secretary-manager of the Grande Brick Co., of Grand Rapids, Mich., recently returned to his office in the Builders' and Traders' Exchange, after a

three weeks' absence. He announced that he had been drafted into the Benedict Order, and stood treat on behalf of Mrs. Joseph.

Frederick Parsons and John Avery, formerly associated with the Atlantic Terra Cotta Co., Tottenville, Staten Island, N. Y., have resigned from the company to become connected with a new clay manufacturing organization which plans to establish and operate a plant at Albany. The new company will specialize in the production of ornamental clay products.

F. M. Eliot, for some years connected with the Washington (D. C.) office of the Hydraulic-Press Brick Co., and who, as before announced in this paper, received an army commission, has just been permanently appointed a first lieutenant. Lieutenant Eliot graduated from the Officers' Reserve Camp at Fort Myer, Va., recently and is to be assigned to Petersburg, Va., temporarily at least.

C. C. Roney has recently associated himself with Miller and Coulson, Pittsburgh, Pa., manufacturers and dealers in burned clay materials, as general sales representative of the fireproofing department, according to an announcement received from that company. Mr. Roney has been identified with the fireproofing interests for fifteen years, and his wide experience in the industry assures competent and intelligent service for those of Miller and Coulson's customers with whom Mr. Roney comes in contact.

H. A. Hall, for the last two years ceramic engineer of the plants of the New York Coal Co., located at Logan, Ohio, has resigned from that position to launch a new concern to be known as the Pulverized Fire Clay Co., and to be located at Nelsonville. Already the new company, of which Mr. Hall is president and general manager, has acquired a tract of one hundred and twenty-five acres of land and has commenced the construction of its plant, which will have a capacity of 150 tons of raw clay or pulverized fire clay a day. It is estimated that operations will be started at the new plant early in September.

California

A new brick plant has been placed in operation in Needles, Cal., by the Needles Brick & Tile Co. It has a capacity of 20,000 brick a day and is under the management of W. Gamble, an experienced brick manufacturer.

A special election will be held on September 5 in the municipal improvement district of Los Angeles, Cal., which includes Bairdstown, for the purpose of voting on a bond issue in the sum of $150,000 for the construction of a sanitary sewer system.

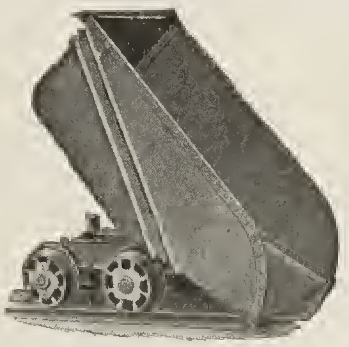
W. H. Edwards, manager of the Brick Manufacturers' Association, with headquarters in the Crossley Building, San Francisco, says business is a little quiet, but not sufficiently so to cause any great alarm. While it is a little hard to get cars, he says the manufacturers manage to secure enough to get along very well.

The City of San Francisco continues to use large quantities of paving brick. A contract has just been awarded for paving Edinburgh Street, between Peru and Silver Avenues, the work calling for a fourteen-foot central strip of vitrified brick pavement. The Board of Works is also taking bids for paving sections of Thirty-sixth and Raymond Avenues and in both instances the specifications call for a considerable amount of brick.

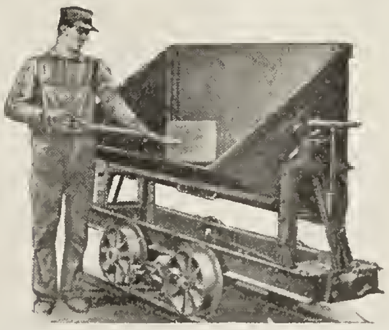
The Theodore Dittell Co., which is establishing a kaolin and pottery plant at Antioch, Cal., has been granted permission by the State Corporation Commissioner to sell forty shares of its preferred stock at par, $100 per share, so as to

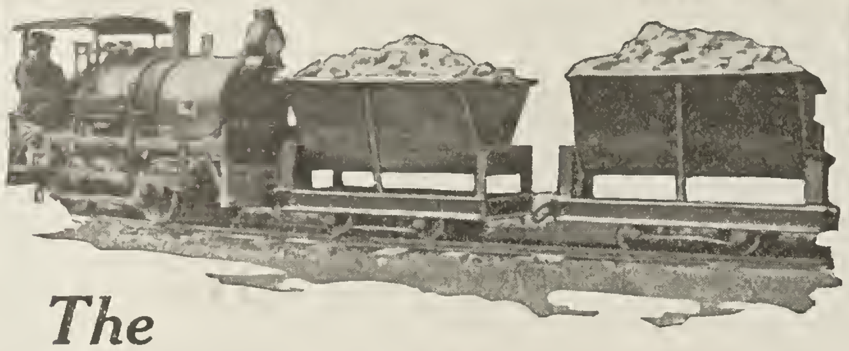
SELF LOADING
ELECTRIC INDUSTRIAL TRUCKS

High Up in the Air
4½ Inches—is where the
Elwell Parker "Self-Loading" Electric Truck
carries the load above all runway obstructions.
A special truck built for the Clay Working Industry to handle all the presses produce.
All parts enclosed to fit your plant conditions and enable you to increase your production at less cost.
Four barrow loads delivered at three times the speed on each trip.
Ask for Catalogue No. 711
The Elwell-Parker Electric Co.
"Pioneer Builder of Electric Industrial Trucks"
Cleveland, Ohio



WATT
CARS
"AT FIRST OR AT LAST?"
They stand for efficiency and durability. Ask for catalogues.
The Watt Mining Car Wheel Co.
Barnesville, Ohio, U. S. A.





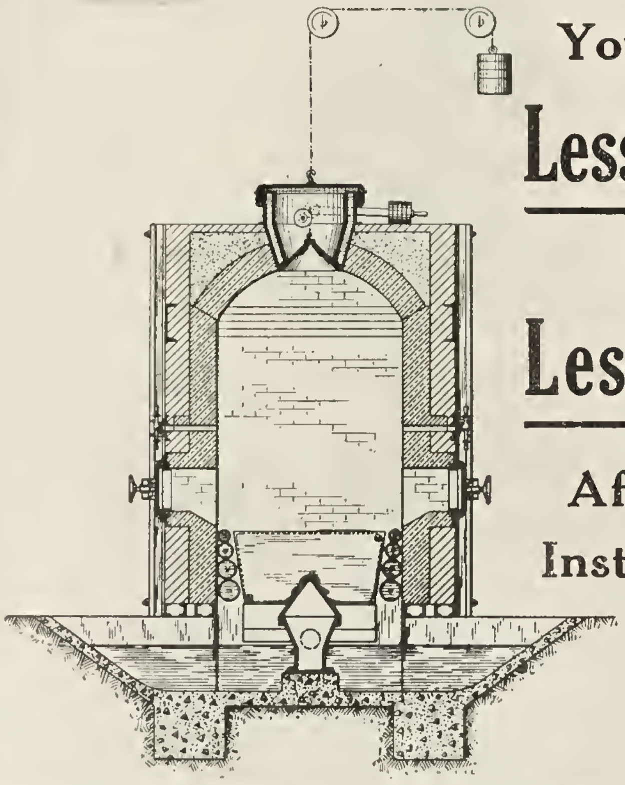
The
Bell Steam Locomotive

is the wish, the dream come true of the average plant—to find a hard pulling, low cost locomotive.

The "Bell" supplies the want, for, in addition to low first cost, it is extremely easy to operate (no licensed engineer is required), and upkeep and operating cost is almost negligible.

It is the most economical locomotive that you can buy—and it can do more work than you will want done. Inquire of

Bell Locomotive Works, Inc.
30 Church Street New York



You Need
Less Labor
and
Less Coal
After the Installation of the
Richardson Gas Producer
(Patent Applied For)

The Ceramic Supply & Constr. Co.
Columbus, Ohio
Kilns Clay Machinery Draft Gauges

net the company the full amount of the selling price. The proceeds are to be used in the completion of the plant. The incorporators of the company are Theodore Dittell, Gustav Gutsch, and H. D. Lempke.

The Gustine Magnesite Co., of Oakland, Cal., has been granted permission by the State Corporation Commissioner to issue 6,656 shares of its capital stock, par value $1, to A. E. Needham and C. H. Johnson in exchange for a lease to operate unpatented mining claims in Stanislaus County, and to sell 3,328 shares to W. J. Maguire for $4,000. The company proposes to use the proceeds from the sale of stock in installing the necessary equipment for the operation of the mines.

Conditions are gradually becoming adjusted at the factory of N. Clark & Sons in Alameda, Cal., part of which was destroyed by fire last month. Temporary machinery, boilers, etc., are being installed. It was the company's original intention to rebuild immediately, but A. V. Clark finds upon investigation that the present condition of the machinery market precludes the possibility of getting the plant entirely rebuilt for many months to come. Meanwhile, he reports business good and lots of inquiries coming in.

A corporation known as the Cannon-Phillips Co. has been organized for the purpose of rehabilitating the Sacramento (Cal.) Clay Products Plant, formerly operated at Ben Ali, Cal., near Sacramento, manufacturing brick and clay products for building and other purposes. The above company, which has its headquarters in Sacramento, has been granted a permit by Commissioner of Corporations H. L. Carnahan to issue 997 shares of its stock to D. A. Cannon, Claire L. Cannon and J. B. Phillips in exchange for the property known as the Sacramento Clay Products Plant, consisting of a brick and tile plant on the American River near Ben Ali.

Delaware

The Far-Better Brick & Tile Co. of Chicago, a Delaware incorporation, has increased its capital from $2,000 to $500,000 for extensions in operations.

The General Bauxite Co., Dover, Del., has been incorporated with a capital of $100,000 to manufacture clay and bauxite products. C. L. Rimlinger, Henry M. Robinson, Wilmington, and Clement M. Egner, Elkton, Md., are the incorporators.

District of Columbia

The West Brothers Brick Co. now have three motor trucks in service, running from its plant located a few miles out of the city, to Washington. One five-ton truck, one three and one-half ton, and one six-ton truck are being used. These trucks have all been installed within the past year and are giving good service.

Both the common brick firms in Washington, D. C., and the face brick companies are much interested at present in figuring on the new annex being erected for the Navy Department. This new modern office building, to cost about $2,500,000 is being erected by private parties and is to be built mostly of brick. It is said that about 400,000 face brick will be needed and about 1,500,000 common brick.

Georgia

The Vitrified Shale Brick Co., Griffin, Ga., has been awarded a contract by the city of Augusta, for the paving of about 60,000 square yards of city streets with vitrified brick.

The Dixie Fireproofing Co., of Macon, Ga., has been organized to manufacture fire brick and other clay products.

The company is planning for the construction of a local plant. Offices have been established in the George Casualty Building. Russell Bone is president of the company.

Idaho

The brick factory placed in operation in Caldwell, Idaho, a few months ago by W. A. McGee and son, Archie McGee, is now turning out 2,500 face brick and 4,000 common brick a day. A ready market is being found for the plant's output.

The Payette (Idaho) Brick Manufacturing Co. completed burning the second kiln of the season during the early part of August. W. F. Sherwood, the owner of the Payette plant, is planning to burn three more kilns, each with a capacity of about 318,000 brick, before the season ends.

With the completion of the dry pressed brick plant in Burley, Idaho, the Heyburn Brick & Tile Co. has nearly doubled its capacity. The fame of the company has spread thru the use of the white brick manufactured in the plant at Heyburn, Idaho, by such large firms as the Amalgamated Sugar Co. and the Burley Flour mills. The Burley plant is the direct result of a growing demand for building material in this section. In the Heyburn plant it is possible to manufacture 30,000 wire-cut brick daily. The new Burley plant will add 25,000 dry-pressed brick to the company's output. The company furnishes employment for eighty men and supports a monthly payroll of $5,000.

Illinois

It is reported that a large terra cotta company has secured options on a tract of land just west of Marseilles, Ill. It is planned to erect a large factory in the near future, if the clay proves on investigation to be of the proper quality.

Iowa

A factory for the manufacture of hollow building tile, drain tile, and flower pots, is soon to be constructed at Bellevue, Iowa, by L. W. Maxwell, who has just disposed of a drain tile plant at Turkey River, Iowa. A number of Bellevue business men will be associated with Mr. Maxwell in the new enterprise. The installation of the machinery will commence in a few weeks.

Kentucky

Garages are at this time going up in considerable numbers in Louisville. The Tyler Building Supply Co. has contracted for the face brick on two important structures of this character.

Maine

Fire caused slight damage at the plant of the Brooks Brick Co., at Brewer, Me., early on the morning of August 7. The roof was burned off the dry house.

The Purinton Brothers Co., of Augusta, Me., started the fires on August 12 under the second kiln of brick of the season at their brickyard on the Belfast road. The kiln contains twenty-four arches or about 600,000 brick.

For the first time in more than a score of years the so-called Hawkes Brickyard on Stroudwater Street, Westbrook, Me., is in operation. The plant was taken over recently by the firm of Baird & Peters, which has spent $25,000 in renovating the yard. Much of the old machinery was discarded, the buildings were repaired, and roofs put in order, new up-to-date machinery installed, new tracks laid, and the entire

A Scummed Brick Wall—Whose Fault?

If your brick do not suit the customer, due to a yellow-grey-whitish scum—or—if after the sale, one year later, they begin to effloresce, to show streaks of scum, what do you do, what can you do?

Ordinarily you apologize and explain in a futile way that it couldn't be helped, that all brick do it sometimes, in fact you do your best to "get out from under," yet down deep in your heart you know that it is your own fault, your fault alone.

The difficulty could have been prevented, all possibility of scum eliminated by using

Rollin's Barium Carbonate

early in the manufacturing stages in the pug mill.

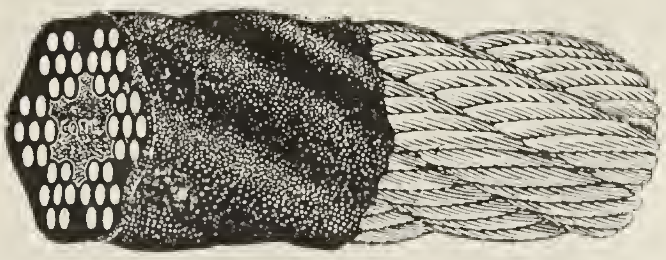
The method is exceptionally cheap, we will tell you how to do it if you will write to the

Rollin Chemical Company, Inc.
Charleston, West Virginia

General Sales Agents
National Analine & Chemical Co.,
224 Madison Ave., New York

RINO LUBRICANT

It Lubricates and Protects Wire Rope and Gears



It penetrates between the wire strands making a complete shield and seal, protecting the rope from corroding liquids that seep in, and also forming a cushion for the wires preventing friction and wear. It also prevents wear in the pulley grooves. A few dollars' worth often doubles and triples the life of the cables and gears.

Write for a Sample We absolutely guarantee satisfaction

The Ohio Filler & Shield Co.
COLUMBUS, OHIO

The best measure of the worth of

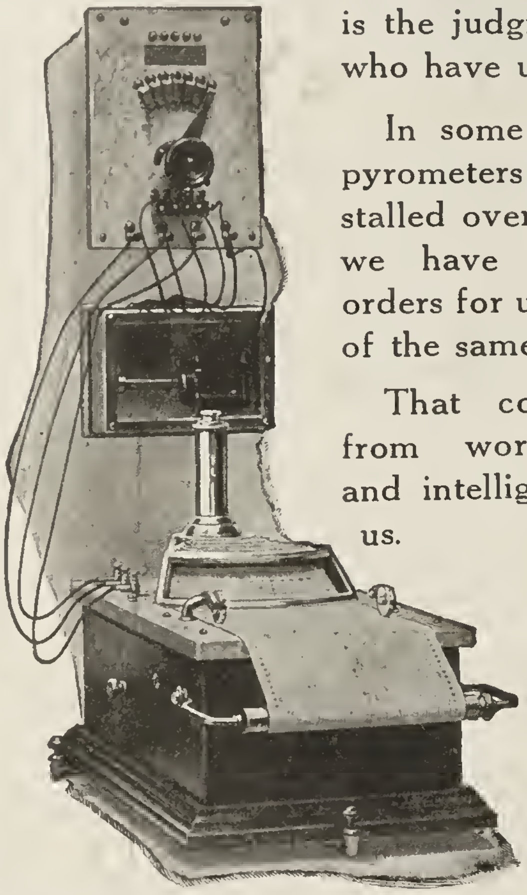
PRICE PYROMETERS

is the judgment of the men who have used them.

In some cases, after our pyrometers have been installed over a term of years, we have received repeat orders for use in other plants of the same company.

That could only come from worthy instruments and intelligent service from us.

The Price Electric Co.
12367 Euclid Ave.
Cleveland, Ohio



You won't have to worry about competition if you treat your clay with

R. H. Precipitated Carbonate of Barytes

You can safely guarantee that your brick will be

Scum-Proof

You can get a higher price and influence architects to specify your product because Efflorescence is prevented absolutely.

But insist on the R. H. BRAND—it's dependable.

We have a complete line of high grade chemicals for the clay industry.

The Roessler & Hasslacher Chemical Company
100 William Street New York
Chicago, Ill. Cleveland O. St Louis, Mo.
Kansas City, Mo. San Francisco, Cal. Philadelphia, Pa.
Boston, Mass. New Orleans, La
Cincinnati, O.

plant put in first class order. The manufacture of brick was commenced on August 2. There are said to be large deposits of clay of excellent quality in close proximity to the yard. In addition to making brick the company will manufacture fancy tiles and other specialties. A large crew of men is already employed and it is expected that the number will be materially increased in the near future. The company hopes to be able to operate some of its departments the year around.

Massachusetts

Two wooden buildings at West Cambridge, Mass., formerly used as boarding houses for employes of the New England Brick Co., which has a large plant at West Cambridge, are being demolished. The company has discontinued the practice of boarding its employes.

Missouri

The Volz Fire Clay Co., of St. Louis County, Mo., has been incorporated with a capital stock of $30,000, of which $20,000 is paid, to mine and deal in fire clay. The incorporators are: William J. Volz, Edward R. Girtans and Alexander Volz.

C. W. Meyer, of St. Louis, Mo., purchased the plant of the Banner Clay Works, of Edwardsville, Ill., for a consideration of $15,000 from Receiver Chas. A. Bartlett, at public auction. It is believed that Mr. Meyer is planning to reopen the plant. Mr. Meyer was one of the several St. Louisians, the original stockholders, who opened the plant in 1902. He also held a portion of the first and second mortgage bonds and receiver's certificates. The company owns a sixty-seven-acre tract of land, most of which is underlaid with a bed of shale suitable for the manufacture of paving brick.

New Jersey

The Cliffwood, (N. J.) Brick Co., which recently went into bankruptcy, has called a meeting of creditors to arrange, if possible, for the reopening of the plant, as well as to adjust matters of credit for the possible resumption of business.

The Old Bridge, (N. J.) Enamel Brick & Tile Co. has commenced the erection of a new kiln of special design. It is expected that the plant will eliminate considerable cracking and checking of the glaze during the burning process.

Former Judge Adrian Lyon, of Perth Amboy, N. J., has been appointed temporary receiver for the Raritan Clay Co., at Woodbridge, upon application recently made to the court. The petition filed gives the assets of the organization as $175,000 and the liabilities as $102,000. The business difficulties have been brought about thru the lack of operating capital.

New Mexico

The Capulin Development & Manufacturing Co., of Dedman, Union County, N. M., with authorized capital of $1,000,000, filed articles of incorporation in Santa Fe, N. M., recently. The concern proposes to manufacture clay products, including fireproofing, brick and tile and to drill for oil and gas.

New York

A $2,000,000 hotel to have 2,000 rooms, practically all equipped with baths and other latest hotel conveniences, is being planned for the Thousand Island region at Alexandria Bay, N. Y., on the site of the present Crossman House, and extending toward the Thousand Island House.

A certificate of authorization of increase in capital stock of the Binghamton (N. Y.) Brick Co., Inc., has been filed in the Broome County clerk's office. The increase is from $30,000 to $50,000. The certificate is signed by Charles C. Austin, George E. Prindible, R. L. Winslow, and James L. Prindible, stockholders of the corporation.

Ohio

The Valley View Lime, Clay & Coal Co., of Sugar Creek, Ohio, has been incorporated with a capital stock of $30,000, to engage in the production of the commodities named in the company's title. R. D. Guse, White Johnson, and others are interested.

Shipment of paving brick from the plants in the Hocking Valley section of Ohio is going on rather actively, because of an increase in cars. Little trouble is now experienced in shipping pavers and the plants of most of the companies are being operated on full time.

The plant of the Berlin Brick & Tile Co. ,at Berlin Heights, Ohio, is to be sold because its owner, Walter N. Lavey, has been called to serve the government. The plant, which has been enjoying a prosperous and healthy activity during the past few years, produces brick, hollow building tile, and drain tile.

Wilson & Beckler, of Athens, Ohio, have received from the state the contract for building one and one-third miles of brick road between Athens and Canaanville, on their bid of $31,451.64, which is well within the estimate. The new road will be built on top of the old road of macadam, sixteen feet wide.

Since there were no bids for brick construction on a stretch of ten miles of the Dixie Highway in Butler County, Ohio, and but one bid for concrete construction, the Ohio highway department refused the concrete bid and will readvertise the work in the hope of receiving a satisfactory bid for brick construction.

In the case of the receivership of the Trimble Paving Brick Co., of Dayton, Ohio, the court recently ordered that the brick which has been held in the company's kilns be shipped to Dayton, in order to permit contractors who have arranged for brick furnished by the company to go ahead with their work. When these brick have been shipped it is understood the plant will be closed down.

The Anders Shale Brick Co., of Cincinnati, Ohio, is now producing from 18,000 to 20,000 common brick a day, which are being marketed thru the Builders' Material Co. under an arrangement recently perfected. The completion of a new kiln enabled the company to reach and maintain the production referred to, and if the market continues to absorb the material at its present rate the company will find the season a profitable one. The plant has been running at capacity for several months.

An order for 1,500,000 paving brick has been received by the Ohio board of administration for use in the improvement of a road in Perry County a few miles south of the state brick plant at Junction City. This order assures the operation of the plant for the rest of the year. It is planned to use brick from this plant for all buildings erected by the board during the next two years, including those at the new prison farm, the building for juvenile research departments as well as all hospital additions.

Cleveland paving brick plants are now busier than at any previous time this year, and the total for the year

JENARCO
Sheet Packing
JENARCO JENARCO
Protects You
AGAINST
LEAKAGE

Instruct your dealer to supply you with Jenarco, and keep a few yards on hand for emergency requirements.

Then, should any leaky joints develop, you have the wherewith to squelch the trouble effectively and permanently. You save the cost and annoyance of unnecessary leaks.

Jenarco is Jenkins Bros. high grade vulcanized red rubber sheeting. It is exceptionally tough and flexible. It comes in sheets in all the usual thicknesses, or gaskets cut to any size or shape.

TRADE JENKINS MARK
Jenkins Bros.
80 White Street, New York. 524 Atlantic Avenue, Boston.
133 N. 7th Street, Philadelphia. 300 W Lake Street, Chicago.
Jenkins Bros. Limited, Montreal, Canada, and London, E. C. England.

101 Questions Answered

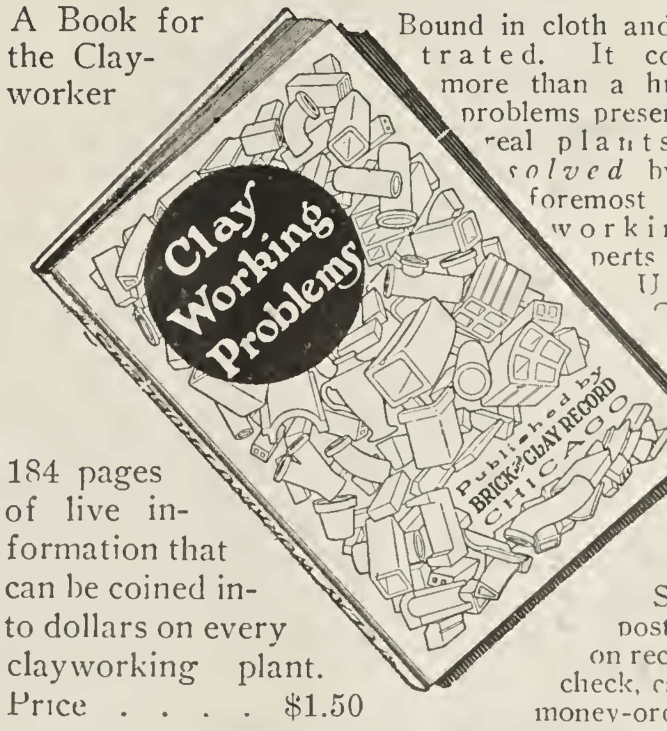
A Book for the Clayworker

Bound in cloth and illustrated. It contains more than a hundred problems presented in real plants and *solved* by the foremost clayworking experts of the U. S. and Canada.

184 pages of live information that can be coined into dollars on every clayworking plant.
Price $1.50

Sent post-paid on receipt of check, cash or money-order by

Brick and Clay Record
445 Plymouth Court CHICAGO


Clay Working Problems
Published by Brick & Clay Record Chicago

The Minimum Gain

They pay for themselves in one year and in addition will save you $300.00.

Cyclone Boiler Grates

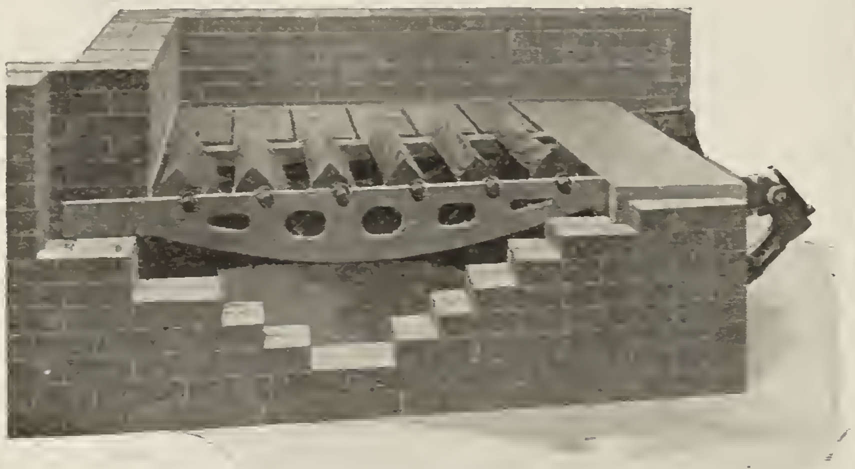
are sold to you with a guarantee that they will save 10% of your coal bill and on 90 days' trial.

This guarantee and trial offer prove absolutely that we know these grates will do as we say they will do.

They-will-save-you-big-money. It is Guaranteed.

Get the details from the

Cyclone Grate Bar Company
Buffalo, N. Y.



Gold Medal Award

Panama-Pacific Exposition
for

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Their Merits are Vouched for by
Hundreds of Satisfied Users
Ask for our New General Catalog No. 8

THWING INSTRUMENT CO.
3336 Lancaster Ave. - Philadelphia, Pa.

promises to break all records in spite of the fact that 30,000,000 paving brick were manufactured in Cleveland last year. The two largest contracts awarded within the past six weeks were for the paving of Lee Road and Brook Park Road, each about two miles in length. The Deckman Duty Brick Co. is furnishing brick for the former and the Cleveland Brick & Clay Co. for the latter improvement.

According to W. J. Pugh, Jr., of the Builders' Material Co., of Cincinnati, Ohio, the demand for face brick has been only fair of late, owing to the limited volume of new work calling for high-class brick. However, the call for common brick has been excellent, the several big jobs now going on in the city using this material producing a first-class market for all of the common brick that can be produced. The company's arrangement with the Anders Shale Brick Co. for its entire output has accordingly proved entirely satisfactory.

The Barkwill-Farr Co., Cleveland, Ohio, reports an increasing volume of business in material for homes. With the high price of lumber, brick and tile seem to be enjoying a general adoption, as the standard construction of single and double residences. The general building situation according to this company seems to be improving since the exceptionally hot weather of mid summer. Those in touch with the building situation in general are inclined to think that the usual fall boom in building, which is due about September 10, has started earlier than usual this year.

The strike at the new court house, at Cincinnati, Ohio, because of a dispute between carpenters and metal workers as to which union should handle certain work on the metal doors has been settled, temporarily, at least, by reference to an umpire, who decided that the matter should be left to the contractor pending decision of the point by the American Federation of Labor. As it happened, the Pursell-Grand Co., a well-known material concern, representing the contractors for the metallic doors, had the settlement of the point on this basis and decided in favor of the carpenters. The men went back to work accordingly, and will presumably await the decision of the high tribunal of labor.

Contractors engaged on paving Neal and Arbor avenues, in Dayton, with brick, recently filed suit in the common pleas court for cancellation of the contract. The contractors, Clifton Hollihan & Co., state that the streets referred to were to be paved with Trimble wire-cut or repressed brick, manufactured by the Trimble Paving Brick Co., which is now in the hands of receivers, rendering it impossible to proceed with the work under the provisions of the contract. The fact that no more brick can be had on the terms agreed upon, and with reference to which the contract was entered into, is set up as a reason for cancellation of the contract, and it is declared that if it is necessary to go into the open market and buy other brick it would mean serious loss to the contractors, entirely without their fault.

The Board of Control and Jurisdiction of the National Association of Builders' Exchanges recently held a two-day meeting at the Hotel Gibson, in Cincinnati, at which various important matters were discussed, including workmen's compensation and uniform laws, ethical practice in figuring building operations, and the question of establishing a national organ for the association. The first steps in the membership campaign agreed upon at the Atlanta convention were also taken, with a view to increasing the number of members from 8,000 to 10,000 by the date of the Pittsburgh convention in February, 1918. The members were President R. K. Cochrane, Secretary E. M. Tate, Ernest McCleary, B. M. Freeman, C. A. Dubel and C. C. Pierson. The Cincinnati Builders' and Traders' Exchange entertained the visitors.

A strike of hod carriers in Cincinnati threatened for a few days to cause a serious tieup in building, as the bricklayers were unable to do anything without the services of these workers. The members of the Hod Carriers' Union, five hundred in number, demanded an increase to fifty cents an hour, and walked out on the refusal of the brick contractors to grant the demand. Among the larger jobs affected were the court house, the new Hyde Park High School, the Y. M. C. A. Building, the Union Gas & Electric Co. plant, and several others. However, after a few days of idleness the contractors got together with the representatives of the men, agreeing to a new scale of 47½ cents an hour, which is an increase of five cents, and which will remain in force until February 20, 1918, at which time a fifty-cent scale will go into effect. Plastering contractors will pay fifty cents at once. The Contracting Bricklayers' Association and the plastering contractors agreed to these terms, which were satisfactory to the men, and the strike was called off.

Pennsylvania

Peter Stipp, Washington Avenue, Scranton, Pa., operating a brick manufacturing plant, has incorporated a company to be known as Peter Stipp & Sons Co., with capital of $50,000, to manufacture brick, tiling, and kindred products. Harry and Peter Stipp, Jr., will be associated with the new organization.

The Philadelphia Tile, Mantle and Grate Association, Philadelphia, Pa., has been holding its summer meetings at Enfield, Pa., giving considerable time to inspection of the Enfield Pottery & Tile Works. Competitions have been held at this plant for members of the association, in tile designing and modeling work, with interesting results. Many amusement features have also been enjoyed, such as baseball, swimming, and general sporting contests.

Operations have been commenced by the Wagner Fire Brick Co., of Scranton, Pa., at its new plant, which has just been completed at a cost of $125,000. Fifty men are employed at present, but it is expected that double that number will soon be on the pay rolls. The company has a large number of orders on hand. The Wagner company is utilizing a new process, that of manufacturing fire brick from waste coal ashes. The brick made by this process has been given exhaustive tests and withstands a temperature of 3,200 degrees Fahr.

At Bethlehem, three miles distant from Allentown, the $1,500,000 operation of the Thompson-Sterrett Co., of New York, arranged several months ago, with the backing of the Bethlehem Steel Co., has also been postponed. This operation was to be only the forerunner of a comprehensive plan to build no less than 6,000 houses in Bethlehem in quick succession, but not a one has been completed to date. While a good many building operations are still on, they are those for which the contracts were awarded earlier in the year. In this lot are 104 houses erected by the Fernwood-Realty Co., of Bethlehem.

Marion
Steam Shovels, Dredges, Draglines and Kindred Machinery

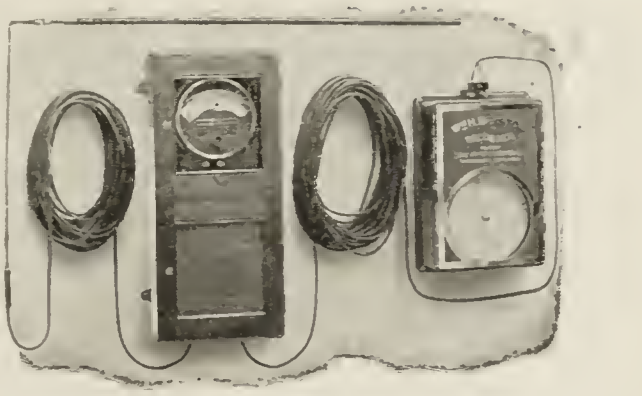
WANT any pointers on revising production-volume *upward* and operating costs *downward?* Universal Brick & Tile Co., Oskaloosa, Mo., can probably give you some! They used to worry along with hand-labor: then they re-equipped their plant, installing a "Marion" and other improvements. Here's the story:—

9 MEN BY HAND, 40,000 BRICK DAILY
7 MEN AND A "MARION," 150,000 BRICK!

And production has become more uniform, too, because "Marions" do the same good, dependable work down in a hot, stuffy pit as they do out in the open; rain and snow mean little, so long as there's material to be dug.

Do you know what "Marion, the Clayworker's Shovel," can do for *you?* Ask us, now; no obligation!

The Marion Steam Shovel Company, Marion, Ohio
Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle
ESTABLISHED 1884
218



TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.
RECORDING PYROMETERS
BRING THE KILN INTO THE OFFICE

—right to the Superintendent's desk, giving him more time to do brain work.
The recorders bring him records in permanent form of the temperatures at the kiln. He can compare today's temperatures with that of yesterday, a month ago, or a year ago.

Down at the kilns an equal number of Bristol Indicating Pyrometers act as a guide for the burners. Team work of this sort eliminates all guess work and the resulting inefficiencies.

Suppose you allow us to show you how you also can increase team work and efficiency by the use of Bristol's Recording Instruments.

Write for Bulletin 163.

THE BRISTOL COMPANY, Waterbury, Conn.
Branch Offices:—Boston, New York, Pittsburgh, Chicago, San Francisco

Brickyard Bill Says: "You kin gin'rally tell the feller who ain't perticler 'bout drying—by the money thet he don't make."

The Standard Drier

is a money-maker for live brick-manufacturers because it cuts drying costs, increases output and improves the quality of the product.

Ask any Standard Drier user how he will trade drying systems with you—see what he says.

List of users and catalog sent for the asking. Estimates furnished without obligation. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.
Cleveland, Ohio
Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

South Dakota

The plant of the Sioux Falls (S. D.) Pressed Brick Co. is completed and installation of machinery has commenced. The structure is 80 by 90 feet, is three stories high, and cost about $20,000 to erect and equip. The company hopes to commence operations during the early part of September.

Virginia

The Nansemond Brick Corporation, of Norfolk, Va., has been incorporated with a capital stock of $100,000, for the purpose of manufacturing brick. A. V. Sturgeon, of Suffolk, is president of the concern and J. B. Moss, of Norfolk, is secretary.

West Virginia

The Compo-Tile Fireproofing Co., of Wheeling, W. Va., has been incorporated with a capital stock of $20,000 to operate a tile plant in Ohio County, W. Va. The incorporators are: R. R. Kitchen, P. A. Poulalion, Edward Kuns, R. W. Schweimler, of Wheeling, and J. L. Coffland, of Bridgeport, Ohio.

* * *

POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

Thomas Maddock's Sons' Outing

One of the most pleasurable events of the outing season was the annual picnic of the employes of the Thomas Maddock's Sons Co., of Trenton, N. J., held on Wednesday, August 15th. The event this year took the form of a trip to Asbury Park, instead of the usual program of athletics at Burlington Island.

The prospect of a day at the seashore with the excellent surf bathing, which Asbury affords, and the many other attractions of the board walk brought a train load of over four hundred, and more than made up for the foot races, potato picking contests and the informal luncheons, with delicious "hot dogs," of former years.

The party left Trenton on a special train shortly after seven in the morning and from 10:30, arrival time at the shore, until 6:20, when the Maddock Special left for Trenton, every one of the four hundred had ample time to crowd in his or her quota of fun and then some. Armed with special tickets the crowd kept things humming at Steeple Chase Park all day, and when the "Cave of Winds" and the "Barrel of Love" became too strenuous, plenty of tickets were handy for a refreshing plate of ice cream or a glass of soda at the Casino.

Everyone found time for at least one dip in the surf. Superintendent John Kelly had himself scheduled for two, but it seems that while on a tour of inspection along the Jersey coast resorts, in a big touring racer, which Mr. Kelly found handy for the asking, the machine was going so fast and went so far that the chauffeur was unable to get him back in time for the second dip in the ocean. He found an excellent weight reducer in Steeple Chase tho. This consists of a torqued mirror which considerably reduces the lateral measurements of the subject.

And while the results are more visionary than actual and only temporary at that, still Mr. Kelly insisted upon taking three treatments in as many minutes and is talking about having one of the mirrors installed at Trenton.

William Kelly, purchasing agent, and Joseph Sullivan, advertising manager, both of whom headed the committee on arrangements, when not busy attending to the comforts of the party, preferred the rolling chairs to bathing. Kelly says: "It's good exercise for the biceps of the pusher." Sullivan, who holds the record for hot dog consumption, refused to tackle any on the board walk. He just hates to waste so many good dogs unless there is a contest in sight.

William Kelly, Purchasing Agent; Joseph Sullivan, Advertising Manager; James A. Parker, Foreman of the Clay Department, and Mrs. Parker "chairmobiling" at the Asbury Park Outing of the Thomas Maddock's Sons Co.

The time passed all too quickly for the picnickers and the smiling, happy faces of the kiddies and the grown-ups, too, on all hands, attested to the success of the outing.

Unfortunately none of the managing members of the concern were able to be present. Captain A. M. Maddock is, of course, busy on government work at Washington, and H. S. Maddock and C. S. Maddock, Jr., were both detained at Trenton on important business.

⁂

POTTERS PRESENT DEMANDS TO BROTHERHOOD

At the joint wage conference between the labor committee of the United States Potters Association and the conference committee of the National Brotherhood of Operative Potters, twelve wage demands will be considered by the manufacturers from the workers and fifteen counter propositions from the manufacturers' side. The joint conference is to convene at Atlantic City, September 12.

The salient part of the counter propositions of the manufacturers is the demand for a cash forfeit of $100,000 to be put up by each side for the faithful execution of all agreements signed. The manufacturers also seek to abolish piece work and place all pottery workers on an equitable day wage basis.

The demands of the United States Potters Association to the National Brotherhood of Operative Potters for the consideration of the joint conference committee are as follows:

Look This Car Over Carefully

Note the way it is braced, and the manner in which it is put together. Stout and rugged, capable of resisting dipper hammering, big chunks dropped into it, derailments, etc. In addition it is Bottom Dump, it does not hammer itself to pieces when dumping.

The Youngstown Steel Car Company
Youngstown, Ohio

Your Fortune For Coal Or Use Canton Shaking Kiln Grates Which?

One of the very prominent refractory men says: "It is simply beyond my comprehension why otherwise good plants still use old methods. We are saving over 25% of our fuel with Cantons, amounting to thousands of dollars each season.

Get our bulletins.

The Canton Grate Co.
1706 Woodland Ave., Canton, Ohio
Southern Representative:
Mc BURNEY & JONES
Efficiency Engineers
829 Trust Co. of Ga. Bldg
Atlanta, Ga.

"SCANDINAVIA"
(Solid Woven Cotton Belt)

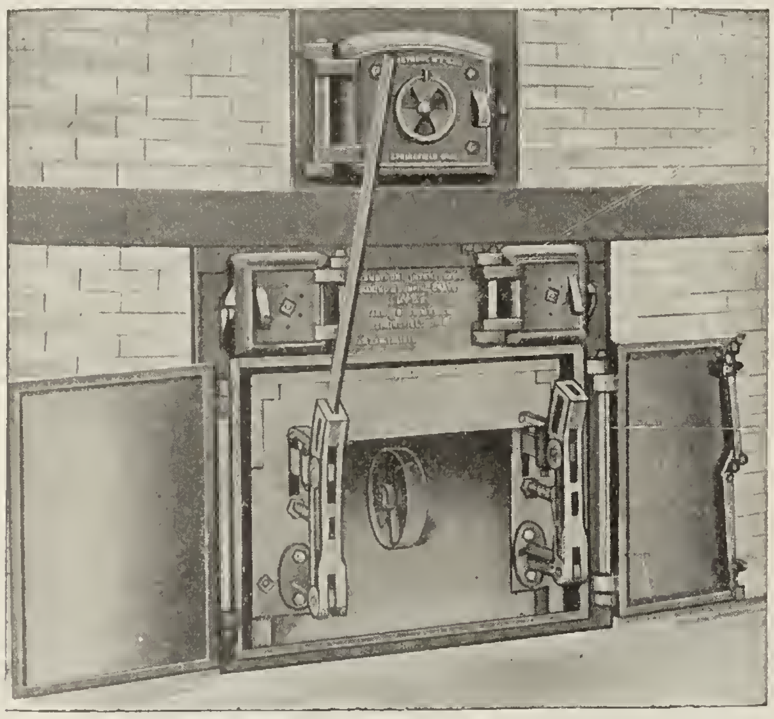
is the kind of belt that gets the preference from those clay-products manufacturers who are most particular about knowing the exact cost of operation in every detail.

"Scandinavia" always shows up so well when the manager looks over the cost figures that there never is any question as to the belt that will always have the preference.

"Scandinavia" is the belt for you to use for power transmission—elevating and conveying.

Try it once and you'll be convinced

Scandinavia Belting Co.
106-108 Reade Street, New York
Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.
Canada: Federal Engineering Co., Limited, Toronto and Montreal.



Just one movement of the dumping device of the
Standard Interlocking Kiln Grate
entirely cleans the fire—clinkers as thick as six inches are easily handled.
This is only one of many points of superiority that make this the ideal kiln grate for every brick plant.
We install it at our expense—you give it a thoro trial—if it doesn't do all we claim we'll remove it without any cost to you.
Write for details and prices.
The Armstrong Manufacturing Co.
SPRINGFIELD, OHIO

LIST OF PROPOSITIONS

The following are the purposes which should be accomplished by a uniform wage agreement. The manufacturers have a right to expect they will be accomplished, as they represent everything of value from the employers' standpoint, that can be derived from a wage contract. Without them, such an agreement is not only useless, but a distinct hindrance and handicap to operations.

Time and time again these things have been pledged by the National Brotherhood of Operative Potters to the Manufacturers, as the return they shall receive for recognition of the Brotherhood in the form of a scale of wages, from which the employers never deviate.

1. Freedom from strikes.
2. Peaceful relations with labor.
3. Conscientious workmanship.
4. Effective co-operation in securing sufficient men.
5. Fair adjustments of new prices and conditions.
6. Uniform wages settled for a given period, upon which selling prices may be based.

Since early in 1916 the National Brotherhood of Operative Potters thru the disloyalty and unreason of a part of its membership, has been unable to live up to any material part of its pledges and obligations under the contract of 1915.

Instead of receiving the benefits above recited, the manufacturers have been harassed by strikes in violation of agreement, by unreasonable demands coupled with threats of strikes for concessions from the terms of the agreement, by careless, indifferent workmanship, by skimping and evasions of duty, by disastrous loss of production, by loss of workmen who have left the trade by reason of short time created by disloyalty of fellow workmen, by inability to procure settlements on a fair basis, by discontent, indifference and a general reign of unreason.

So called Brotherhood men have blocked all effective measures for obtaining necessary men, they have driven loyal men from the trade in discouragement and disgust.

Thru strikes alone, in direct violation of their own pledges, they have taken more than a million dollars from the pay envelopes. They have caused whatever distress and want have existed among pottery work people. They have sacrificed one-third of the legitimate profits of their employers, and they have created wide spread discontent among purchasers of pottery on account of the inability of the manufacturers to supply their wants during this time of special need.

Instead of the wage agreement being, as it should be, a safeguard and protection during this period of stress, it has proven to be a snare and delusion, and thru broken faith, men who were parties to that agreement have come dangerously near wrecking the industry.

For these reasons the manufacturers will not again enter into an agreement that binds only one side.

The following propositions are therefore submitted with a view of reaching some form of agreement, that will guarantee to both parties, a faithful and inflexible observance in all details, or complete indemnity in case of violation.

1. That mutual pledges be given in the form of cash forfeits, surety bonds, or otherwise, that shall fully protect the employer from financial loss resulting from violation of contract by employes, and vice versa, and that said bonds or forfeits shall not be less than $100,000 on both sides.

2. That the manufacturer may require that every employe shall enter into an individual contract with his employer, pledging both parties to a faithful observance of the

terms of agreement between the United States Potters' Association and the National Brotherhood of Operative Potters.

3. That the following emergency measures be adopted to remain in force so long as there continues to be in the pottery industry, a labor shortage traceable to the war.

A. That there shall be no restriction against or opposition to the employment of women in any department, nor in any trade, limited only to the class of work women are physically competent to perform.

B. That the doors shall be open to foreign white labor in all departments and trades, and that the employer shall be the judge of competency.

C. That all rules in reference to the ratio of apprentices be suspended, and that employers be permitted to put on an apprentice in any department or trade, if after application to the Brotherhood officials a competent, steady journeyman is not furnished to fill a vacancy, within ten days.

D. That lunch time be abolished.

4. That the resigning of three or more men in a body by giving two weeks notice, or the discharging of three or more men in a body, with or without notice, when done clearly for the purpose of accomplishing some end, not specified in the agreement, or that cannot be accomplished legally through the regular channels, shall be regarded as tantamount to a strike or lockout, and shall be an explicit violation of the agreement.

5. That casting prices shall be set for large jugs, ewers and other articles now being made by that process, which are not specified in the casting list, and that these prices shall be 16⅔ per cent. less than the pressing list when handles are cast on, and 10 per cent. less than the pressing list when handles are stuck on.

6. That any and every firm so desiring may install a time clock or clocks and may require that every employe shall register thereon; or that any other system may be installed that will enable the employer to determine the exact hours of employment or the exact wages earned, or the exact amount and character of work done by each and every person in his employ, and that every workman shall cheerfully co-operate by observing in all reasonable ways any system that may be adopted for this purpose.

7. That all piece work and contract work be abolished in all departments and a straight day wage system be substituted thruout for all trades, to which the individual manufacturer may have the option of adding a bonus system.

8. That kilnmen shall be required to draw their own kilns, or furnish enough men to fill out kiln-drawing crews, when a full crew of kiln-drawers is not available.

9. That the arbitrary action of Decorating Kilnmen, in refusing to use Spurs must be withdrawn, and that they must use Spurs whenever required by the firm.

10. That it is at any time permissible for any manufacturer to change the height of any sagger or the number of pin holes in a sagger, provided sagger height is not made less than those in reasonable present practice among the manufacturers, and provided the number of pin holes is not greater than at present represented by reasonable practice among the manufacturers.

11. That the National Brotherhood of Operative Potters go on record with its members in urging them when necessary, during the period of war, to help with the work in any other department, so that everyone may be kept steadily employed, and no department thrown out of work temporarily for want of co-operation by any other department that might at that time be better supplied with help.

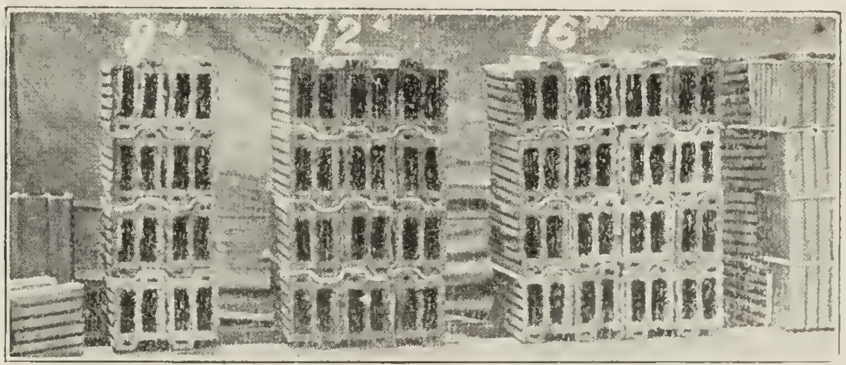
12. That the skimping of work such as, refusal to board flat ware in the dipping room, when desired by the firm, the

Tycos
FERY RADIATION
PYROMETERS
Eliminate Guesswork from the Manufacture of All Products requiring extremely high Temperatures ★ ★ ★ ★

We Manufacture - Thermometers and Instruments covering every Temperature requirement in Metallurgy and Chemistry

A Catalog Cheerfully Sent Upon Application

The Taylor-Cambridge Division
Taylor Instrument Companies
Rochester, N.Y.



Hollow Ware Plants

Listen: If you want a hollow tile that is easy to make, easy to dry, easy to burn, and which has already met with universal approval by both masons and buyers—

Investigate

"LOXALL"

We are going to license it in every territory in the U. S. A. and your section may still be open. Get in touch with us at once.

J. E. EXNER
602 Lincoln Street COFFEYVILLE, KAN.
"LOXALL" is patented in the U. S. A. and Canada

For Temperature Control

The Veritas System

It is the cheapest possible pyrometric system, it gives you an infallible means of knowing exactly what your heat is accomplishing.

In addition to this, it will teach you new points in burning that are not ordinarily evident, it produces an interest, previously lacking, on the part of both burners and firemen.

Each single phase of the burn is indicated—where temperature is concerned... blue smoke, vitrification, finish, etc.—and you should have it.

Results are guaranteed or we will not install.

The Veritas Firing System Co.
TRENTON, N. J.
and Herbert Forester, Box 37, Cleveland, O.

The Cleveland Hydraulic Press Brick Co. and the Dover Fire Brick Co. are prominent Cleveland, O., users.

HETTRICK RED STITCHED CANVAS **BELTING**

Make a mental and a written note of that name. It is a symbol of belting satisfaction. Its good reputation has been deservedly won in **Service.** Its qualities are such that it doesn't slip; it wears like iron; and there is only a negligible amount of stretch. When next you are in need of new belts, let us prove our claims that **this** belt is the **best** belt for clay plant work. **Make a mental note.**

The Hettrick Mfg. Co.
Toledo, Ohio

practice of dipping more than two small pieces of ware with one motion, the attempt to dip without hooking flat ware above five inch size, the packing without proper or standard strawing, and similar attempts to evade doing work in the honest, correct and established manner as contemplated by the wage scale, shall be condemned and shall be recognized as an explicit violation of agreement, subjecting the workman guilty to immediate pink-slip discharge.

13. That the inspection of ware is distinctly a part of the work of the fettler or finisher, and that he may be required to examine every piece, front and back, and reject all that are found imperfect.

14. That sagger-makers may be required to put up the soak and pug it when common labor cannot be procured for that purpose, and the hourly rate of wages for this work shall be set by the conference.

15. That the Conference Committee shall be clothed with full power to act upon and to adjust all questions of wages and conditions, that may be presented verbally or otherwise at conference regardless of whether the matters may or may not be specifically embodied in either the list of propositions of the Brotherhood or the Manufacturers.

* * *

SOUTHERN POTTERIES COMPANY PLACES FIRST OF TEN UNITS IN OPERATION

Operation of ten pottery units of seven kilns each, with the glost and bisque kilns two feet larger in diameter than those now in general use, is the ultimate construction of the Southern Potteries Co., which recently placed in operation its first unit of seven kilns at Erwin, Tenn. Such is the announcement of Edward J. Owen, general manager of this corporation, and plans for the building of the second unit of seven kilns are about worked out. This plan, which will ultimately give the corporation a capacity of seventy kilns, will make it the second largest domestic pottery producing company in the United States, being exceeded only by the Homer Laughlin China Co., of East Liverpool, Ohio, which also operates two large plants in Newell, W. Va., across the Ohio river from East Liverpool.

In authorizing the erection of kilns larger in diameter than the present standard, the company is giving the seven-kiln plant unit the capacity of an ordinary nine-kiln general ware pottery.

It has been pointed out that each pottery unit will be under competitive management, and that applications are now on file from between 500 and 1,000 pottery workers from the different pottery districts. Overhead operations of these potteries are pointed out to be less than the northern plants on account of the ability to secure raw products almost at the "back door." The Southern Potteries Co. is using only American materials in both its bodies and glazes. Coal is being used for kiln firing, and this is being obtained from mines close to the plant. Completion of these twin units will make Erwin, Tenn., a larger pottery center than Sebring, Ohio, which now boasts more than sixty kilns manufacturing general ware. The second seven-kiln unit plant is expected to be ready for operation before next spring.

* * *

ORDERS NINE MONTHS BEHIND

New business continues to be received by the pottery manufacturers thruout the country in such heavy volume that it will take at least a year for everything to be cleaned up. It is officially admitted in many offices that shipments are from six to nine months behind and in some cases it will require that long to clean up all orders now on file. Several office managers within the last few days have announced that they have refused to accept any orders at all, and suggesting to their new customers that it would be well for them to look elsewhere for their merchandise. Buyers have been flocking into the market within the last fortnight, and those seeking hotel ware for army camps have admitted that they have been unable to secure enough ware to fill requirements for immediate delivery. The United States Potters' Association some time ago sent a representative to Washington to advise the department that the manufacturers stood ready to serve in any way they could, producing ware at just a margin above actual costs, but it seems that no hearing was granted the messenger of the association. At this time the trouble is to get the ware for the different camps. That it could have been had there is no denying the fact.

Fall business looms up large, and there will be many orders for holiday requirements that will be unfilled by the different general ware potteries. The labor situation is quite below normal, and production is not up to the usual standard. The federal draft is eating its way into the pottery ranks, and this coupled with volunteer enlistments has taken many workers from the clay shops. That a scarcity of domestic pottery will exist late this fall is the general admission of all those who have been watching the situation closely.

* * *

The AUDITOR CONDUCTS *a* PERFORMANCE WITH HIS SET *of* TRAINED RECORDS

(Continued from Page 406.)

"There are still some other advantages in these records," began Barnes, but the general manager having risen, standing with his hands thrust deep into his pockets, interrupted laughingly, "I've discovered already why you call it a Perpetual Inventory. It's because you are perpetually finding a new application for it!" And with that parting sally he made his escape.

A few evenings later as he neared his home, his little boy came running to meet him, holding aloft in a hand with bandaged fingers, the pen knife with the tool box accompaniment.

"Thank you, father, for the knife," he called as soon as he was within hailing distance.

"Well, I'll be blessed," said the general manager. "Don't thank me, boy; go to the office tomorrow and thank Mr. Barnes."

But he was mistaken. It was from Jimmy, the office boy, who had overheard the remarks about the coveted knife.

"Why do you paint the back of that belt with CLING-SURFACE, George?"
"To make it pliable quick, Uncle, and prevent cracking"

"GOOD MORNING, Jim."

"Good morning, Mr. Hawley."

The new Superintendent had stopped in the engine room, where Jim, the Engineer, was getting everything ready for a flying start. The company had a big Government contract, and was running twenty-four hours a day, six days a week, three shifts and five engines, four of which were running.

"What are you doing with No. 5 Jim?" asked Mr. Hawley. "Got some belt trouble?"

"No sir. While she's shut down I've had George paint the back of that new belt."

"*Paint* it?"

"Yes sir, with CLING-SURFACE. You see, all belts get pretty dry, and it used to bother me a lot until I got this CLING-SURFACE. Well, the company advises painting the back of a good clean belt with CLING-SURFACE, so it will soak it up quicker and prevent cracking, and I gave it a trial. That's the new belt—all the others were painted about a year ago."

"How do they work?"

"Fine! There's the belt on No. 1. I had that painted last year when Mr. Hodges was Superintendent, and put the CLING-SURFACE on just warm enough to use. You'd be surprised how quick the stuff got into the leather, and since then it's just as clean and pliable as a kid glove."

"Do they slip?"

"Not a bit. George puts a little CLING-SURFACE on the belt face with a stick about once or twice a week—just as fast as they will take it up, and the belts always pick up the load and hold it. And I haven't had to take up any of them since this treatment was started a year ago."

* * *

It is a patriotic duty to *conserve* your present equipment. Instead of buying new belts, treat your present drives with CLING-SURFACE, and make them last longer and work better for you—and Uncle Sam.

Prove it at our expense. Order a 25 or 50 pound can on trial—60 days, with these results guaranteed *before* you pay.

Remember, use CLING-SURFACE and you won't need belt dressing.

Cling-Surface
the life preserver for belts
TRADE MARK

CLING-SURFACE COMPANY
1029 Niagara Street
Buffalo, New York, U. S. A.
Copyright 1917 by CLING-SURFACE COMPANY

IF IT'S A QUESTION OF KILNS— WE CAN ANSWER IT

Equally efficient in round, square or rectangular kilns, single or multiple stack type. New Hook Kilns cost less, as a rule, than kilns of other styles. Old kilns can be changed to our type at comparatively small expense.

Give us number and size of your kilns, kind of ware, burning time and fuel consumption. We will estimate cost of installation and saving that can be effected.

Grate Bars, Bands, Lugs, Ventilators, Castings

HOOK PATENT KILN CO.

High and Spring Streets

COLUMBUS, OHIO

APARTMENTS SCARCE *with* GOOD REASON

(*Continued from Page 393.*)

apartments, converted houses and those bordering on the tenement class, however, are not and have not been as much in demand. There may be four hundred of the latter classes vacant in August, 1917, compared with 500 in August, 1916. One or two new apartments built during the year or nearing completion are already rented and occupants of other good class apartments are renewing leases months in advance. Rents on apartment houses and residences have not advanced at all in the past year.

The situation in Louisville has been different in considerable degree from that in industrial centers. During the first two years of the war labor moved out of Louisville. Now, with the federal army cantonment building and other operations in prospect, the trend is backward and it is predicted by the leading real estate men that two months more will see pretty nearly every thing habitable in the city occupied. In order to stop wild stories of the 15,000 or 20,000 vacant houses in the city, the local real estate exchange last October took a census, block by block, of residence property. This showed the following vacant properties: Residences 561; cottages 795; tenement houses 58; apartments 493. Of this property only eleven per cent. was in good condition; fifty-seven per cent. was in fair condition; twenty-six per cent. in bad condition, and six per cent. worthless.

Best estimates of the Louisville real estate men today is that these vacancy figures, on all classes of property, have been reduced by from fifteen to twenty per cent., while inquiries as to available homes have greatly increased in the past several weeks. By far the greater proportion of vacant places are of the kind without even a hydrant in the yard —nothing but a cistern, many of them old shacks of no class at any time and nearing the century mark, or past it. There are many old mansions in the older part of town, going to ruin, with from ten to twenty rooms—utterly impossible for consideration and not much good for any purpose, altho some of them have a certain romantic charm. Negroes have many of them.

Louisville in the past several years has been over-built on office buildings and on cottage homes of cheap construction. Apartment houses are considered dubious propositions because of the difficulty of estimating the trend of values and impossibility of figuring that appreciation of site value will offset depreciation of structure. Still they are filled as fast as they go up. Small working man's homes of rather cheap construction have been overdone. The big demand is for small residences, of class and good construction, to sell for $6,000 to $10,000 or to rent on the same basis.

As to rents the real estate men are all agreed that they should be increased, especially on apartments, but there has been a good deal of difference of opinion as to just how much good the cantonment was going to do in the way of filling up the city, and, again, the property owners and real estate men did not want to be put in the attitude of putting up rents to gouge the newcomers brought to the city in connection with the army camp.

and HOUSES

RENTS RISING

to BUILD NOW

"QUEEN CITY" REPORTS FEW APARTMENTS FOR RENT

There are fewer unrented apartments here now than last year, but there has been little change in rental rates, altho the trend is upward.

It should be interesting to note that as far as Cincinnati is concerned, there is a real scarcity of modern apartments, rental properties having been confined largely to duplex houses. Many real estate concerns are now beginning to build apartments, however, with more success and rentals run much higher than for similar accommodations elsewhere on account of the demand for apartments. For instance, the Frederick A. Schmidt people, the leading reality operators, report a sixteen-apartment building started last fall and completed June this year, in which all the apartments were leased at good figures for the full year by Christmas from the plans.

HARDLY A VACANT APARTMENT TO BE FOUND

There is hardly a vacant apartment of any kind to be found in Evansville, Ind. The demand for the past year or more has been greater than the supply, according to J. R. Mitchell, of this city, who is president of the Indiana Real Estate Board. It is almost impossible to rent a modern house here and even the smaller cottages are hard to obtain. According to Mr. Mitchell, "the city is shy on rent stuff," to use his own expression. This same condition existed last August.

It is impossible to give comparative figures for the reason that conditions have not undergone any change since August, 1916. Rents are about where they were a year ago and in fact the change, if any, has been slight. According to members of the local real estate board rents on the cheaper classes of houses have advanced slightly during the past year, but for the better grade of houses rents are about where they were.

Few store buildings and business houses are vacant and rents are about what they were a year ago at this time. Real estate men and building material men, as well as contractors, are pointing out the fact that because of the very few vacant houses of all descriptions found in the city, that now is the time to build and the general opinion is that building operations will take on new life this fall.

DETROIT REALTY MEN PREDICT BIG DECREASE IN VACANCIES

At the present time in the city of Detroit there are more than the average number of apartments that bear "for rent" signs but this condition is not due to an over-production of apartments as much as it is due to the large number of people who are spending the months of July and August at summer resorts and summer cottages. Michigan is dotted with small lakes, and especially is this true in the southeastern section of the state in which Detroit is located. On account of business being more or less dull this summer, a great many families decided to spent the hot weather months at the nearby lakes, coming into town once or twice a week,

THREE MEN and a THEW

are equivalent to a former pit gang of THIRTEEN MEN.

The Monongahela Clay Manufacturing Co., of Monongahela, Pa., say, that in getting out over 200 tons of hard blue shale they do not work the shovel to capacity—nor use it full time in its ten hour shift—yet it saves them money, and there is no worry over the old labor conditions. Before installing the shovel it required from twelve to fifteen men to do this same work.

Summarize that—one Thew displaces ten or more men, it digs all of the shale that is used, and only works intermittently. It produces 200 tons of shale, eliminates labor trouble and saves money in the operation.

Write a letter to us today, asking for additional proof, costs and relative data.

Circular "27-C" Gives Complete Information.

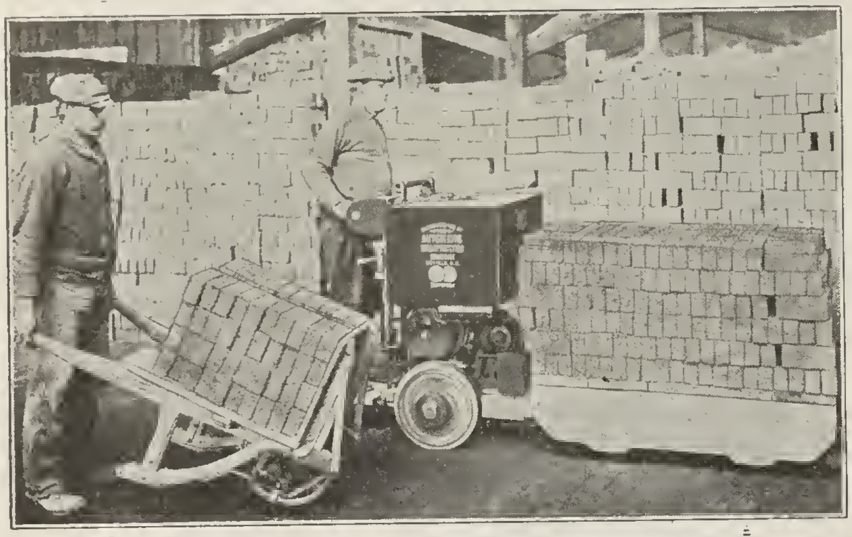
The Thew Automatic Shovel Co.

Lorain, Ohio

New York Office—30 Church Street

Killing Two Birds With One Stone

1. *Saving labor.*
2. *Accomplishing a hard task.*



The Automatic Elevating Platform Truck

takes the place of the men who have joined the army—those that are sick and those that do not "show up" on Monday morning—it enables you to run full handed—to produce to capacity. It saves from 4 to 8 men on a hard disagreeable job. Ask our Engineers to show proof of merit.

The Automatic Transportation Co.
2933-2965 Main St.
Buffalo, N. Y.

while the men can commute into Detroit very easily owing to the convenient transportation facilities via electric line. As most of the people who have gone to these lakes for the summer formerly lived in apartment buildings—many in furnished apartments—it has caused a greater vacancy than usually occurs during the summer months, altho it has always been that there were more flats and apartments for rent in Detroit during the summer than during the winter months.

Leading real estate men look for normal conditions after September 15. They contend that the people now at summer resorts will again take up apartment living, while on the other hand the number of new apartment buildings erected during the summer months has not kept pace with previous years for the same period. Another argument is that owing to the scarcity of houses in the right neighborhood, the high cost of fuel and upkeep on a house, many people will move into apartments this fall who never done so heretofore. This statement is substantiated by the fact that inquiries since the middle of August for flats and apartments have been greater than during the same month in 1916 and 1915.

Taken on the whole, Detroit realty men feel that the number of vacancies in flats and apartments will be comparatively few after the first of October.

As for rents decreasing, real estate men look for no changes and believe prices will be practically the same as a year ago for fall and winter. There may be some slight reductions—that all depends on conditions arising in the next few months, but it is the general belief that rents will remain unchanged, altho one thing is absolutely certain—they will go no higher.

The writer knows of one real estate firm owning considerable property on thorofares within the half mile circle who have had plans completed for apartment buildings and who will build such structures the minute they are assured that they will be able to get all the necessary materials, and sufficient labor to erect them without delay.

The average rent for a five or six room apartment in a desirable neighborhood runs about $50 per month, with heat. In neighborhoods where a middle class of people live these apartments bring $35 to $40 per month.

NO APARTMENTS TO BE HAD FOR EIGHTEEN MONTHS

There are no vacant apartments (or dwellings, for that matter) in Wilmington, Del., nor have there been any for the past eighteen months, so this August is the same as last in that behalf. In a canvass of some of the leading real estate brokers of the city today (August 23) it was learned that most of them have a large waiting list of applicants for apartments and dwellings all the time. This condition has obtained for more than a year and no relief is in sight. A few apartment houses (and dwellings also) are being built all the time, but they are engaged before they are completed in practically every instance. As for houses, very few are built to rent.

Rents, on both houses and apartments, show an increase averaging ten per cent., as compared with August of last year. Apartments which last August brought from $15 to $60 a month are now renting at from $16 to $75. The minimum price for dwellings last August was $6 a month, while the maximum was $80. This month the minimum is $8 and the maximum $100.

One large real estate dealer said today that a short time ago a large business concern offered a bonus of $10 for every house that could be obtained for employes—new skilled help that was being brought here—the request being for fifty. All that could be obtained was two. The same man has been offered large amounts to obtain houses or apartments for prospective renters, but has been unable to anywhere near supply the demand.

One concern recently decided to build a block of forty dwellings for persons of moderate means, in a preferred section of the city, but after the first estimate on the cost had been obtained the bulder announced that he would have to charge twenty per cent. advance on the original estimate, because of figures given him by the plumbers, whereupon the project fell thru. Other similar projects have failed for the same reason.

SAYS RENTS WILL BE STRONGER AFTER THE WAR

Investigation shows that Memphis, Tenn., is getting along splendidly in the matter of having a smaller amount of vacant property than formerly. It is true that there is a considerable amount of vacant property and some of it well located realty, but in many instances there is a special reason—improvements before occupancy contemplated, special business enterprises contemplated, conservation of property interests, in some instances, because it is held at unreasonable figures, in other cases not well located or business has shifted position which in a few months may be reversed and the same property readily rented. There are comparatively few modern apartments for rent, as well as modern homes. Business property on Main, Second, Front, Union, Madison, Monroe, Beale and in the North section, Adams, Poplar and Jefferson streets, is well taken up at good rentals. There are just a very limited number of places, most of them vacant for but a short time. It is said that three or four years ago immediately following the prohibition move and other upheavals, that there were six or seven thousand vacant buildings in Memphis. That figure could be divided by a large number now.

Rents for 1917 show no decrease over 1916. Values are as firmly held, and in a few cases, have advanced, but in the main they have remained as before—very high—and they are likely to go higher before they go lower. Certainly when the war is over they will be stronger.

Memphis has a real estate exchange, chamber of commerce and realty men, all of whom have the utmost confidence in an active fall and winter, and next year showing large building developments.

NEED MORE SHELTERS IN JERSEY

Paterson (N. J.) has no vacant apartments. Prominent real estate men say they could rent a score within a day if they were available. Builders are not erecting apartments, claiming that the present high price of materials prevents their making a profit on their investment.

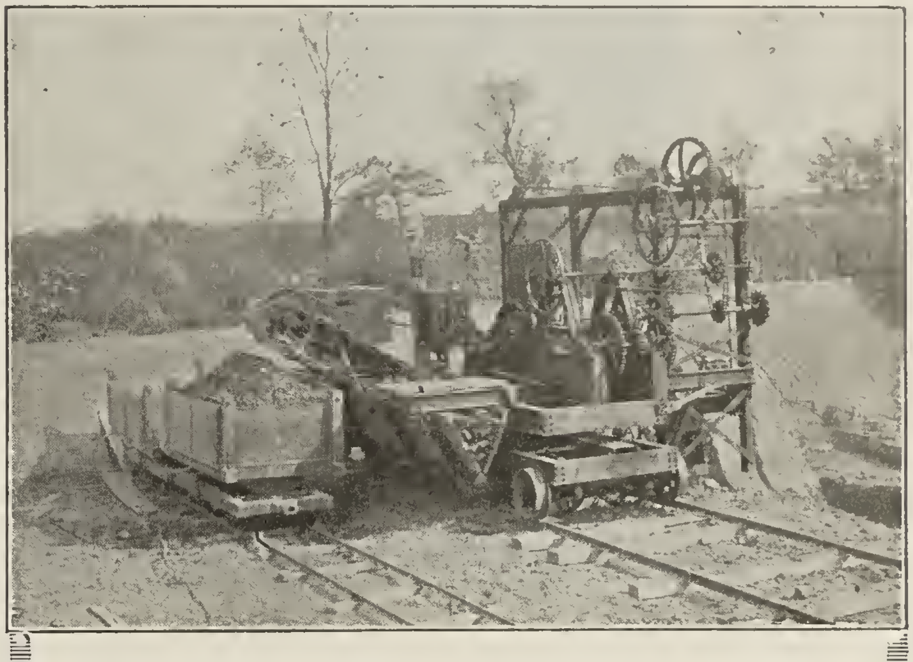
Rents for apartments have not advanced. They run from $12 to $20 a month, depending upon the number of rooms and the location. Several new mills are in process of erection and the demand for apartments in the districts where they are going up far exceeds the supply. In fact, two very large ones are going up beyond the outskirts of the city itself and living accommodations are entirely lacking.

They have a way here of remodeling old houses into two or three apartments with four to six rooms each, depending upon the size of the building. If they make only three they are not amenable to the tenement house laws which prescribe certain regulations regarding fire escapes and similar building features.

For the better class of houses and flats, renting at $30 a month up, the demand is not quite so heavy, but the number is below the requirements. Such houses have ad-

A Mechanical Clay Digger that Eliminates the Loss Produced by—

"Not Enough Labor"



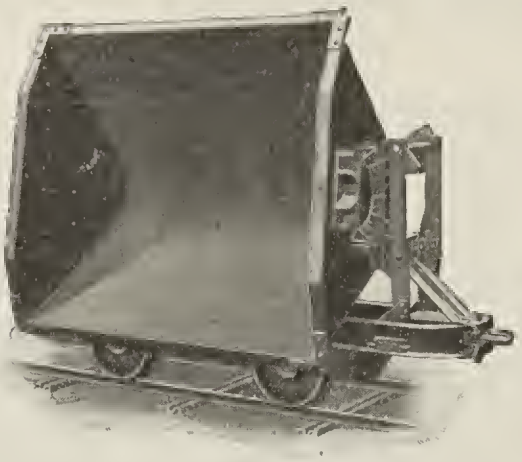
The Buckeye Clay Digger

costs about one-half as much in first cost as other power excavators—it is operated at a very low cost—it is simple in both design and operation, and repair costs are low—it is flexible, can be operated above or below the bank—its capacity is invariably more than is necessary—it produces a perfectly mixed material—and with all of this its big additional feature is that it practically eliminates the pit gang.

We will gladly send proofs.

The Buckeye Traction Ditcher Company
Findlay, - - - Ohio

If You Are Needing a Clay Car Quickly



Don't Buy a Second-Hand Car That Someone Else Has Almost Worn Out—

Because of the foresight of our purchasing department we have laid in a big supply of high grade steel (the only kind we use) and we can ship to any clay products manufacturer anywhere, **almost immediately,** any of our

Dryer Cars

or

V Dump Cars

Anyway—tell us your requirements. We won't make you any promise we can't keep—but we will promise quick delivery. Try us and see.

Just Leave It to Lakewood

The Lakewood Engineering Co.
Cleveland, Ohio

vanced in rent about $5 a month on an average. Better grade houses have at times advanced as much as $10.

In Passaic, a city of 75,000 people, seven miles away, substantially the same conditions prevail, tho more apartments have been built there than in Paterson during the year just past. The rents are from $12 a month up to $22.50, for apartments ranging from four to six rooms in a fair location. In a few instances, people are now living in tents waiting for new apartments to go up. No change in rentals has been made, with the exception of some of the new apartments whose tenants have changed. The new ones are paying perhaps $2.50 a month more than the old ones.

Of the better class houses enough are being built to supply the demand at present. Rentals are from $30 up, depending upon the quality of the house and the location. The advance has been from $2.50 to $5 a month.

Hackensack, the largest town in Bergen County, seven miles from Paterson in another direction, has no large mills and few apartments, but its better class houses are all occupied at rentals ranging from $5 to $10 a month more than last August, and $30 is a low figure for a seven or eight room house in a desirable location there.

Rutherford is a suburban community, selling more commutation tickets to New York workers than any other station along the Main line of the Erie, excepting Paterson. It has few apartments. For those the rental runs from $18 up, depending upon finish and location, and the demand always exceeds the available number. Single houses are renting at from $30 up. Flats of four to six rooms are held at from $20 up.

Ridgewood, another suburban community, has but two or three apartments. The rentals are from $16 up, tho they rarely exceed $25. Single houses of six to eight rooms in good locations are from $35 up and rentals have increased about $5 a month.

NO VACANT APARTMENTS IN READING

There are no vacant apartments in Reading and there have been none for the last six months. A three-section, five-story apartment house is now under erection, but it will hardly be ready for occupancy before the New Year and the outlook is such, that by the time it is finished, every apartment will be rented.

The same conditions hold true as to workingmen's houses with either reasonable prices for outright purchases or those that are rented. In this city of 20,000 homes, real estate men say, there are not a dozen empty houses to be had today.

Rents are ten per cent. higher at present than they were a year ago. The average rent paid by workingmen is from $12 to $15 per month. The second class or higher priced homes, have an average rental of $20 to $25 per month and enough applicants for every vacancy that by chance seems to occur, which chances are at present a real exception to the rule. The home that commands a rental above $30 and on up to $40 or $50 per month, however, has few applicants. The same conditions prevail where contractors build fine homes to sell above $5,000 or $6,000. These are always on their hands quite a while before a purchaser is met.

During this summer hardly fifty homes were erected in Reading. All the builders and contractors postponing operations on account of the high cost of building material. The only real big operation was the three-section, five-story apartment house that may be placed in the "apartment home" class of building.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

---

The Manufacture of Flower Pots

Very few people realize that the yearly consumption of all sizes of red-clay flower pots is truly enormous. Almost every home in the land has its quota; the greenhouses of course must have thousands; the apartment houses, the hotels, the stores and even the offices in the great city office buildings have the red pots.

When cold weather starts, signaling the coming of winter, the natural tendency of every one is to see that the flowers are taken-up and "potted," and in the cities where all is brick, stone, tile and terra-cotta, the flower in the flower pot is a fixture on high window sill and stand both winter and summer.

The use of the common-red-clay-flower-pot is so universal that millions and millions are needed each year to supply the demand.

Ordinarily they are easy to make, especially so by the men who are acquainted with the processes involved in the manufacture of drain tile, brick, hollow ware, etc. And therefore our suggestion that the flower pot machine be installed in a corner of your present plant.

In every plant a corner can be found near the line or counter shafting, or where an electric motor can be installed, and the flower pot factory inaugurated as an interesting side line for your men.

One or two men in their spare time can make barrels of pots, the clay being prepared with the regular batch for your brick or tile.

The drying is accomplished according to the nature of your clay, whether it is tender or tough, but usually the pots are set off by themselves, covered with a gunny sack, or placed in a closed room, and allowed to dry gradually, altho sometimes it is possible to load them on rack and pallet cars and send them directly thru the dryer.

In burning, either whole kilns are burned at once with the pots nested, or small jags are burned in pockets with the other ware or placed on top of the kiln. The former procedure is usually preferable. In this case the green ware is made in all sizes and dried carefully, until an amount has accumulated that will fill a kiln.

The greenhouses, conservatories, the stores, such as apartment stores, hardware stores and even the ten-cent stores, all are in the market for the pots. The greenhouses, of course, consume large quantities, but all of them are simply middle-men that sell to the great ultimate consumer—Mrs. Housewife.

She uses hundreds of thousands each year, and your share is in providing the merchandise for her to use. The Baird Machine & Manufacturing Co.'s share is to provide the machine to make them and to tell you how to manufacture and where to sell. Details from the Baird Machine & Manufacturing Co., of 54-56 Jefferson Avenue, Detroit, Mich.

* * *

Federal Motor Truck Announcement

An announcement of great interest to the automobile world is made by the Federal Motor Truck Co. of Detroit, Mich., confirming the election of W. C. Rowley, for some time a member of the Board of Directors, to Vice President in charge of sales succeeding J. F. Bowman resigned. Mr. Rowley assumed his new duties August 16th.

Mr. Rowley has been connected, in various capacities,

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.
400 Chestnut Street
Philadelphia, Pa.

You Do Not Burn Sand Lime Brick

Only a small fraction of the fuel necessary in the manufacture and burning of clay brick is required in the manufacture of sand lime brick, and that fuel is used only to produce steam for power and for steaming the brick in the hardening cylinders.

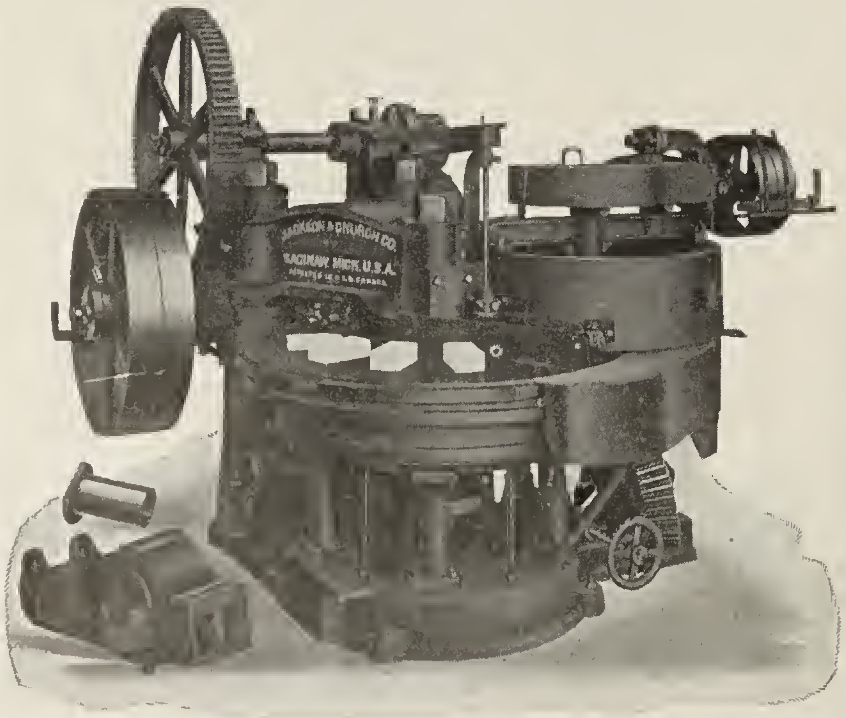
There is a big demand for the clean, white, hard sand lime brick, and the production cost is low.

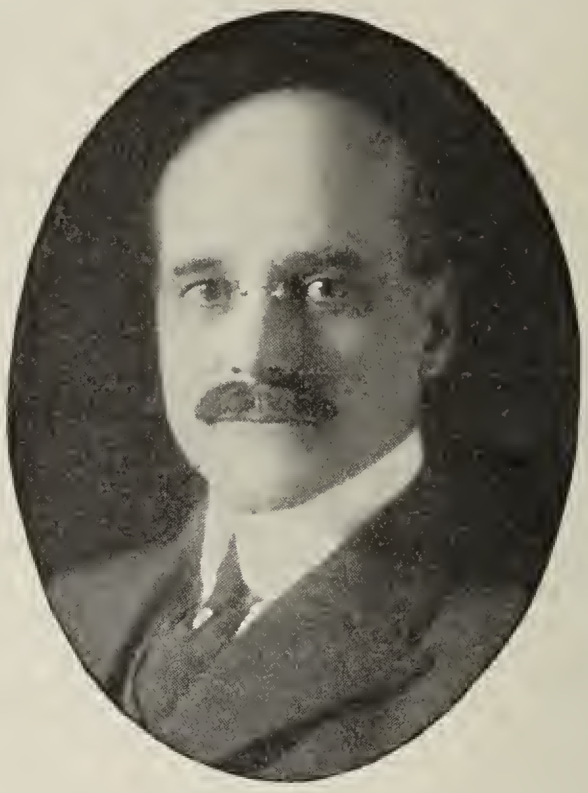
You will find it to be to your advantage to find out more about our process.

Write immediately to the

Jackson & Church Co.
Saginaw, Mich.

Builders of a complete line of Sand Lime Brick Machinery, Boilers, Rotary Dryers, Kilns, etc.





W. C. ROWLEY
Sales Manager, Federal Motor Truck Company

with the Michigan Central Railroad for 32 years. He began his railroad career as agent for the fast freight lines of the Michigan Central. Ten years later he became General Agent, continuing in this capacity for two years when he was advanced to Assistant General Freight Agent at Bay City. In 1903 Mr. Rowley became General Freight Agent at Detroit, from which he resigned to take up his duties with the Federal Motor Truck Co.

Looked upon as one of the foremost transportation men in the country Mr. Rowley brings to his new position a complete knowledge of traffic methods. In his experience Mr. Rowley has handled a large organization transacting millions of dollars worth of business annually. The executive knowledge he has gained and his ability for coping with difficult problems in moving goods will be of inestimable value to the Federal organization.

* * *

Are Your Boilers Clean?

If not, they are not only a source of much loss, but also of great danger. A compound which has been found to be successful in preventing and removing scale under any condition is made by the Illinois Boiler Cleaning Compound Co., of 127 North Dearborn Street, Chicago, Ill. It is a product which can unhesitatingly be recommended as a safe, effective scale chaser, and which possesses many advantages not to be found in other compounds.

It is applied monthly instead of daily, thereby effecting a large saving in labor and time and money in the course of a year. It comes in either a powder or a liquid form, as preferred by the customer, and it is guaranteed to keep a boiler absolutely free from scale for $2.45 per 100 h. p. for thirty days. However, its cost, altho but half that usually required to perform the same work, is a matter of secondary importance. The important feature of Illinois Boiler Cleaning Compound is that *it does its work well.* So well, in fact, that several brick companies are using it to the excluson of all other materials for this purpose.

The Illinois Boiler Cleaning Compound Co. will, upon receipt of the proper shipping instructions and statement of the horsepower of your boiler, send you a sufficient quantity of their compound to enable you to determine its value. When you have found that it will do all its makers claim for it, and send a repeat order, they will bill you for this trial case at the usual rate. If you don't send a repeat order you won't receive a bill for the compound used.

There are no strings attached to the offer, and by availing yourself of it, you are obligating yourself in no way. And no gold watch will be sent you to induce you, or your engineer, to use Illinois Boiler Cleaning Compound—the product is sold simply on its merits, which are high enough to enable its manufacturers to propose this trial offer and feel confident that after you have given their compound a trial, you will not be without it.

By taking advantage of this unique offer you will remove the scale nuisance from your plant, eliminate the possibility of explosions occurring from this source, save fuel, increase the life and efficiency of your boiler, and prevent pitting, corrosion and foaming.

* * *

The Keystone Excavator

The model No. 3. weighs ten tons, mounted on broad traction wheels and can be taken anywhere that a loaded wagon can be taken. It has two traction speeds and moves under its own power. This portability and flexibility are two of its best features.

The capacity of the excavator is 250 to 500 cubic yards in ten hours, and will replace from 25 to 50 hand shovelers.

The powerful crowding thrust digs thru the toughest clays, at the lowest upkeep and operating cost on record. Catalog and names of clay plants using them may be obtained by addressing Keystone Driller Co., Beaver Falls, Pa.

* * *

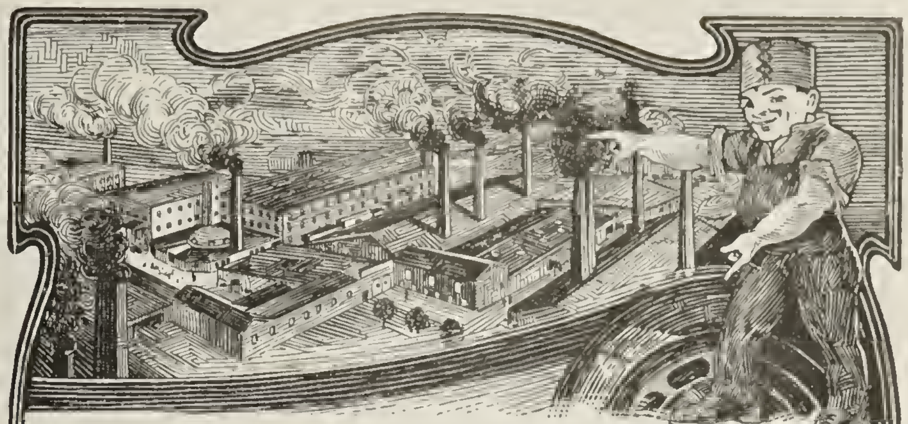
Mr. Paxton Becomes Affiliated with International

Another member has recently been added to International's corps of engineers in the person of Geo. H. Paxton, Springfield, Ohio.

Mr. Paxton is a construction engineer of many years' experience, specializing in Producer Gas Fired Continuous Kilns; and it can safely be said that he has personally superintended the installation of more kilns of this type than any other two men in the country.

He is also a first-class dryer and machinery man and

GEO. H. PAXTON
Latest Addition to International Corps of Engineers



"On-the-Job" Gandy The Moving Spirit of Industry

Thirty-seven years' service in the field has made GANDY recognizable everywhere as the "moving spirit of industry."

To the great army of wheels in mills, mines and industrial plants, the command has come to speed up—to increase production—to supply the needs of a world in arms.

Your company of wheels will do the expected and deliver maximum production if "On-the-Job" GANDY—the original stitched cotton duck belt—is in command.

You've only to put GANDY to the test to prove that you've got a belt that gets **all the pull from the pulley.**

The Government has right of way on all transportation lines—traffic conditions can hardly be expected to improve—we advise prompt ordering for present and future needs.

Upon receipt of belting order, look for painted green edge and well-known GANDY trademark.

Request samples and prices—obtainable at mill supply houses or home plant.

The Gandy Belting Company
732 West Pratt Street
Baltimore, Md., U. S. A.
New York Branch, 36 Warren Street

The Price of Coal

subject to such uncertain conditions as exist at the present time, demands that you keep a watchful eye and an open ear upon this big factor of your operating expense.

The price of coal will not be any lower than it now is, and will undoubtedly go much higher within the next few months, because of the material increase in miner's wages and mining supplies.

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

so will be a valuable factor in extending "International Service" to the clayworker. International can well consider itself fortunate in securing the services of Mr. Paxton.

⁂

Insulation for Kilns

Remarkable records have been made on quite a few plants that have used Kieselguhr for insulating both walls and crown of the kiln. The Kieselguhr in powder or brick form will insulate ten times as well as ordinary fire brick; in other words the heat conductivity of this material is only one-tenth as great and one inch of Kieselguhr is equivalent to ten inches of fire clay brick.

Attention has been called so often to the extremely wasteful method of building kiln crowns without protection that many experiments have been carried on proving that the Kieselguhr material spread over the kiln crown reduces the time of burning and the amount of fuel necessary.

Space does not permit of a more complete discussion here, but full information may be obtained by writing to the Celite Products Co., 11 Broadway, New York, N. Y.

⁂

News About Belting

If you are interested in belting both in its operation and maintenance, you will be interested also in the Sawyer Belting Co.'s little journal named "The Sawyer Booster."

It is filled with stories of operation and data concerning the use and upkeep of belting under many conditions. When you get thru reading it, you should pass it on to your engineer and mechanic where undoubtedly it will be profitable to you by teaching them better methods and news about belts.

If you do not already receive it, a request to the Cleveland, Ohio, office of The Sawyer Belting Co. will bring it to you without cost.

⁂

Kissel Flexibility

"A motor truck to prove its highest efficiency to owners must not only be flexible while traversing the congested wholesale and retail districts, reliable in maintaining long distance schedules and dependable on long grades and rough roads, but its size and general construction must be adaptable for the particular kind of haulage and delivery work for which it is built," says H. P. Branstetter of Kissel Kar.

"One of the big features which truck purchasers find in Kissel trucks is that in their designing and construction as well as in their mechanical features and structural units, their ability to solve the haulage problems for which trucks of their size are called upon to perform, are practically built-in to the truck as a whole.

"This insures each truck model doing its work efficiently, giving at all times reliable performance in hauling and delivering maximum loads at minimum operating cost."

⁂

Interior Kiln Coatings

The most annoying and persistent expense attached to clay plant upkeep is that of kiln repair. The fire brick in the interior walls, arches, flues and furnaces is subject to both extreme heat and cold and to mechanical action such as abrasion, expansion and contraction.

Consequently the deterioration of fire brick in the wall is very high. The deterioration usually starts at the joints where the mortar first falls out, leaving a hollow joint, the brick edges soon follow which in combination with high temperatures soon produces a job for the mason.

A fire cement has been developed which is used as a mortar for laying the brick in the wall, and, after the wall has set or carried thru one burn, more of the same mortar is applied to the walls as a plaster.

Professor Geo. F. Brown Cr. E. Department of Ceramics, Rutgers College, says: "New England Fire Cement has a low firing and drying shrinkage. It will not tend to crack or flake off when applied to the surface of brick work. Its mechanical and working properties are very satisfactory."

The New England Fire Cement Company, Inc., 240 Lisbon Street, Lewiston, Maine, manufactures the cement.

BRICK *and* CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other
Tuesday by

Kenfield-Leach Company
445 Plymouth Court Chicago

Chicago, September 11, 1917
Vol. 51 No. 6

Leading Articles in This Issue

Clay Products in Nineteen-Sixteen Show Twenty-six Per Cent. Increase 480
Spending a Week at Illinois' Largest Paving Brick Plant....485
The G. M. Learns Something About Freight Rates....488
Hints on Salt Glazing....491
War Stimulates Pottery Industry at Syracuse, N. Y....493
Rate Fundamentals and Tariff Interpretations 494
Hollow Tile on the Farm Gets Valuable Publicity 497

* * *

The Editor's Corner....479

* * *

Special Departments

Letter Box 503
Machinery and Equipment....524
Pottery Notes 514
Straws That Show the Wind....516
The Superintendent 499
Wake of the News....505

American Clay Mchy. 527, 529
American Pulverizer Co....540
Armstrong Mfg. Co....505
Automatic Transportation Co....525

Baird M. & Mfg. Co....507
Ball Engine Co....541
Barber-Greene Co....524
Barrett Company....531
Beighlee Electric Co....511
Bell Locomotive Works....510
Black Diamond....520
Bonnot Co....464
Boss Co., J. C....**503**
Brewer & Co., H....547
Bristol Co....508
Broderick & Bascom....501
Brown Instrument Co....471
Buckeye Traction Ditcher Co....Front Cover

Canton Grate Co....512
Celite Products Co....503
Chambers Bros. Co....467
Chase Fdry. & Mfg. Co....536
Clarage Fan Co....500
Classified Ads....548, 550
Cleveland Alloys Co....532
Cork Insert Co....521
Crescent Belt Fastener....501
Crimora Manganese....503
Cyclone Grate Bar Co....509

Didier-March Co....538
Drymore System....504
Duplex Truck Co....470
Du Pont Powder Co....539

Englehard, Chas....541
Erie Steam Shovel Co....541
Exner, J. E....514

Fate Co., The J. D....551
Forester, H....513
Freese & Co., E. M....545

Gandy Belting Co....517
Garnet Co....532
General Electric Co....475
General Store....532
Goodrich Co., B. F....476

Hardinge Bros., Inc....501
Harris Bros. Co....549
Hendrick Mfg. Co....536
Hettrick Mfg. Co....504
Hill Clutch Co....501
Homestead Valve Mfg....532
Hook Patent Kiln Co....516

Illinois Boiler Cleaning Compound Co....532
International Clay Mchy....469

Jackson & Church Co....526
Jenkins Bros....511

K-B Pulverizer Co....502
Keystone Driller Co....514
Kissel Motor Car Co....518

Lakewood Engr. Co....515
Lincoln Electric Co....473
Link-Belt Company....474

Main Belting Co....465
Manufacturers Equipment....466
Marion Machine Fdry. & Supply Co....502
Marion Steam Shovel....507
Morgan Co., F. W....500
Morse Chain Co....543

Ohio Filler & Shield Co....509
Ohio Galv. & Mfg. Co....537
Orenstein-Arthur Koppel....537
Osgood Company....536
Owens Continuous Tunnel Kiln Co....532

Philadelphia Textile Machinery Co....468
Potts & Co., C. & A....472
Price Electric Co....502

Randall Graphite Sheet Lubricator Co....500
Roessler & Hasslacher....510
Rollin Chemical Co....512

Sanderson-Cyclone Drill....502
Sauerman Bros....500
Sawyer Belting Co....540
Scandinavia Belting Co....500
Schofield-Burkett....538
Smith Co., Claude....552
Standard Dry Kiln Co....506
Steele & Sons, J. C....546
Stupakoff Laboratories....503
Sturtevant Mill Co....552

Taylor Instrument Companies....505
Thew Auto-Shovel Co....519
Thwing Instrument....506
Trade Names....533
Trautwein Dryer & Engineering Co....463

Union Chain & Mfg. Co....500

Veritas Firing System Co....513
Victor Balata & Textile Belting Co....536

Wallace Mfg. Co....544
Watt Mining Car Wheel....508
Webner, Frank E....532
Weller Mfg. Co....462
Westinghouse Electric & Mfg. Co....539
Williams & Co., C. K....500
Wood & Co., R. D....523

Youngstown Steel Car....513

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The SALESMAN'S "EASY" JOB

as seen from

the OUTSIDE

The traveling salesman's got a cinch;
He always wears good clothes;
He never feels the money pinch,
For on "Expense" it goes.

In best hotels he always stays
And eats the best of food.
He, billiards, pool and poker plays
And says, "I pass; that's good!"

He rides upon the Pullman trains
And flirts with pretty girls.
With stories good he fills his brains
'Fore swine he casts his pearls.

He takes the dealer out to lunch
And calls him "Ol' Hoss Bill";
He gets his nerve, his pep, his punch,
From smoking Omar's pill.

He always has a lower berth—
The upper makes him sick.
He loudly wails the diners' dearth
Of foods from which to pick.

When'er it rains, he taxicabs
On company expense.
When orders he don't get, he crabs:
"My trade ain't got no sense."

He's bothered with the writer's cramp
From making out reports.
He loves to see the "Vampires" vamp
In moving picture sports.

'Twixt house and customer he stands
In every altercation;
The lemon to his house he hands
To keep trade's approbation.

On orders he ne'er puts a price,
For that is too much trouble;
He thinks the office has it nice
Bookkeeping on a bubble!

He only keeps his job a year,
Six months, or maybe three;
His boss relieves him with a cheer
And turns him foot-loose—free.

and INSIDE

The traveling salesman's got no cinch,
Altho he wears good clothes;
From work he's never known to flinch—
He's always on his toes.

In best hotels he always stays
And eats the best of food;
He knows that to prolong his days
He must have all that's good.

He rides upon the Pullman trains
To keep up proper style.
His goods, his house, just fill his brains—
He always wears a smile.

He tries to get a lower berth,
He sleeps so much better.
The sweetest thing to him on earth
Is wifey's daily letter.

He treats his dealers with respect,
And tries to help them plan.
With shoulders back and head erect,
This salesman is a man!

He doesn't mind a rainy day;
It only makes him hustle,
For, tho his hair is touched with gray,
He still has lots of muscle.

He stays up awful late o' nights
In writing out reports,
For business supersedes the sights
Of movin' picture sports.

For house and customer he stands
In every altercation;
What's right and just to each he hands
And keeps their approbation.

He writes his orders out in full,
He never makes mistakes;
He knows the order clerk's hard pull
And saves him from bad breaks.

He only keeps his job a year;
He never stays much more;
He moves up, onward, with a cheer
To heights to which he'll soar.

MORAL:

The salesman who has got a cinch
Is rarely sawing wood.
The salesman who from work don't flinch
Is always making good.

E. C. Roberts.

The EDITOR'S CORNER

Governmental Price Fixing Brings Cost Keeping Into the Limelight

RECENT ACTIVITIES of the Federal Trade Commission and of other special commissions appointed by President Wilson for the purpose of establishing maximum prices on coal, wheat, steel, and so forth, have served to emphasize the vital importance of cost accounting as a protection to business.

No matter what the manufacturers or producers of the materials on which prices have been set, think about the justice of the action taken or the figure established, and regardless of the correctness of the government's work in arriving at the prices set, the fact remains that the cost data of the manufacturers whose commodities were investigated was used to determine the prices established. If some of the manufacturers did not keep their costs correctly then not only did they suffer, but they caused the whole industry of which they are a part, to lose out, for the tendency of errors in cost accounting is nearly always towards a lower (and false) cost.

In talking to a retail coal dealer the other day, the writer was very much surprised to learn of the great discrepancy in the costs reported by dealers in a certain state at one of their meetings recently. The evidence is that some do not know what it is costing them to do business, and consequently, are not in a position to protect their interests when the time for government action on retail prices comes.

While there is no indication that the government will step in and determine maximum prices for clay products, except in the case, perhaps, of one or two commodities, what has happened in the case of steel, coal and wheat should serve to call our attention to the very great importance of keeping complete and accurate costs.

* * *

Do Your Part in the Ceramic Society's Membership Campaign

THE AMERICAN CERAMIC SOCIETY has issued a call for help to its members to assist in the new drive for an increased membership. It has asked, in a recent letter, that every man whose name is on the roll of the Society, do his "bit" by getting five application blanks properly filled out and forwarded to Ross C. Purdy, chairman of the membership committee, Worcester, Mass.

While the clayworking industry needs a better knowledge of the properties of its products, which would make possible the extension of its markets, a better appreciation of efficient business methods; better selling methods; overcoming of excessive competition and so forth, technical research and technical investigation are essential for the further progress of the industry. While some manufacturers are devoting their attention to the first-mentioned group of needs, others are giving their time to the technical problems of the industry and for their benefit as well as for the benefit of technical progress, it is necessary that the one organization in the industry which stands for this sort of thing, should be given the unqualified support of all concerned.

With an increase in membership, the American Ceramic Society will have at its disposal a larger sum of money to spend, which in turn spells greater achievement along technical lines. A paid secretary is a crying need, but he will not be possible until the membership of the organization is substantially increased. There is also a need for quicker action in getting the papers which are delivered at the annual meeting, before the members in printed form. It is admittedly a great handicap to be compelled to wait at least six months for the appearance of the Transactions. During these six months much of the technical information and the results of investigation lie dormant and useless while they are being prepared for publication.

There are a number of other accomplishments which could be credited to the Society if it had more funds at its disposal and with a view toward making these possible at the earliest date, let us all put our shoulder to the wheel and push. You, no doubt, know of five men engaged in the clayworking industry who are not as yet members of the Society, but who could be persuaded to join. Get after them. Get busy.

* * *

Industry Shows Encouraging Gain

ATTENTION IS CALLED to the report of the U. S. Geological Survey, Washington, D. C., covering the production of clay products during 1916, appearing on the following page. The increase of twenty-six per cent. in value of clay products sold in 1916 when compared with the previous year is exceedingly gratifying, to say the least. The increase in quantity and value of common brick, which has been declining for some years, is without a doubt the crowning joy of the entire report.

CLAY PRODUCTS *in* SHOW TWENTY-SIX

When Compared With the Figures for the Previous Year—Show a Very Encouraging Gain, According to a Report

LARGE INCREASES in the value of brick and tile made in the United States in 1916 are reported to the United States Geological Survey, Department of the Interior. The total output amounted to $159,042,849, an increase of $33,248,005, or more than 26 per cent. over the figures for 1915. The value of every variety of product classified by the Geological Survey except two was increased. Common brick, the product of greatest value, the output of which has been declining in recent years, showed a large increase in both quantity and value. There were 7,394,202,000 brick reported for 1916, valued at $49,357,411, or $6.68 per thousand, an increase in quantity of 543,103,000 brick and in value of $7,212,119, or 17 per cent. Fire brick valued at $30,806,129 increased $11,966,198, or 64 per cent. Sewer pipe, which showed a large decrease in 1915, rallied in 1916, and showed a large increase. Its value in 1916 was $13,577,006, an increase of $2,317,657, or 21 per cent. Vitrified brick or block remained practically stationary, being valued at $12,236,890, an increase of only $5,991 over 1915. The face brick industry showed a considerable gain, its output being valued at $11,464,614, an increase of $1,929,078, or 20 per cent. Drain tile and architectural terra cotta also showed large increase over 1915. Tile (not drain) valued at $6,475,646—consisting of roofing tile ($914,240), floor tile ($1,438,231), ceramic mosaic tile ($1,308,861), faience tile ($814,077), and wall tile ($2,000,055)—showed a gain of $1,289,409, or 25 per cent.

Brick and tile products are classified naturally into three divisions: (1) structural, (2) engineering and refractory products, and (3) miscellaneous wares. The first, structural materials, including building brick of all kinds, terra cotta, fireproofing, and tile (not drain) was valued at $84,643,252 in 1916, an increase of $14,234,136, or 20 per cent. over 1915; the second, engineering and refractory products, consisting of drain tile, sewer pipe, stove lining and fire brick, were valued at $67,305,448, an increase of $15,636,664, or 30 per cent. over 1915; the third miscellaneous wares, consisting of such products as adobes, assay supplies, burnt clay ballast, chemical brick and tile, chimney pipes, tops, conduits, glass house pots and supplies, retorts, sewer block and wall coping, were valued at $7,094,149, an increase of $3,377,205, or 91 per cent. over 1915.

Pennsylvania was the leading state in the production of brick and tile, reporting these wares to the value of $29,630,563, or 19 per cent. of the total, an increase of $8,732,281 over 1915. Pennsylvania's principal brick and tile product in 1916 was fire brick, valued at $15,200,354, which was nearly 50 per cent. of the total value of fire brick for the entire country. This was an increase of $6,111,404 over 1915. Ohio ranked second, with products valued at $25,506,344, or 16 per cent. of the total, an increase of $4,596,502. Ohio's principal brick and tile product in 1916 was sewer pipe, valued at $5,132,810, an increase of $1,413,020 over 1915. Illinois was third, with products valued at $16,507,845, an increase of $2,664,799 over 1915. Illinois' principal brick and tile product in 1916 was common brick, of which it was the leading producer, its output being valued at $6,738,152, a decrease of $132,838 from 1915. New Jersey was fourth and New York fifth, with products valued at $9,749,524, and $8,410,340, respectively, both states showing large increase in value compared with 1915.

The supply of common building brick for the enormous consumption of Greater New York, the largest brick market in the United States, comes principally from the narrow strip of land on either side of the Hudson from New York City to Cohoes, including Bergen County, New Jersey. Every county in this region contributes to the supply except one—Putnam—and in late years the Raritan district, in Middlesex County, New Jersey, has contributed largely to the Greater New York market.

In 1916 the number of brick marketed in this region, according to a report in preparation by the United States Geological Survey, Department of the Interior, was 893,552,000, a decrease of 66,975,000 brick. The value of this output, however, was $5,915,254, an increase of $906,189 over 1915. The average price per 1,000 brick was $6.62, an increase of $1.41 over 1915.

The New York part of the region is by far the larger producer, reporting, for 1916, 702,596,000 brick, or 79 per cent. of the total, valued at $4,552,468, or 77 per cent. of the total of the region. This was a decrease of 38,972,000 brick, but an increase of $807,920 compared with 1915. The average price per thousand in this part of the region increased $1.43, or to $6.48. Ulster was the leading county in this part of the region, reporting 222,651,000 brick, valued at $1,444,275, a decrease of 6,692,000 brick, but an increase of $333,783 in value, compared with 1915.

The New Jersey part of the region reported 190,956,000 brick, valued at $1,362,786, being a decrease of 28,003,000 brick, but an increase of $98,269.

* * *

W. Va. High School Launches Ceramic Course

The Warwick China Co., of Wheeling, W. Va., has offered to co-operate with the board of education there in the establishment of a department in ceramic and clay modeling, as a vocational department of manual training of the Wheeling High School. The offer has been accepted by the board and a committee appointed to confer with the company in the establishment of the needs for this branch of training.

The schools of New York and the East are leading

NINETEEN-SIXTEEN PER CENT. INCREASE

1915—the Quantity and Value of Clay Wares Manufactured Just Released by the United States Geological Survey

the way for ceramics as vocational training, according to C. E. Jackson, president of the Warwick company, who addressed the board, and outlined the plan in which the company would assist in the establishing of this branch of study. The course to be instituted at Wheeling will include preparatory work in clay modeling and pottery which will fit the student for entrance to a university where a further and higher study of the art can be maintained. The need for experienced and educated men in this line is great and it offers a wide field towards advancement.

The Warwick China Co., thru a petition presented by Mr. Jackson, provided that a teacher be secured at a salary of $1,200 a year, his company offering to pay one-half of the salary, $600, and provide all material for the first year. The company will fire all of the work in its kilns at the pottery and co-operate with the teacher in the work. The offer does not necessarily provide that the student upon the finishing of the course enter the Warwick pottery. That firm, seeing the great opportunity for vocational training, has come forth with an offer which will provide for the specialization in education towards advancement of vocational training in all lines which the schools of the country are taking up.

* * *

Large Increase in Freight Car Service

With an increase in freight car equipment of only three per cent., the railroads rendered nearly twenty-six per cent. more freight service in June this year than in the same month last year

These figures are contained in a report on freight operation which has just been received by the Commission on Car Service of the Railroads' War Board. They furnish additional proof of the successful efforts which the railroads are making to help win the war, by producing greater transportation efficiency. They also indicate that the shippers are doing their part, too, as freight traffic could not have been increased to such an extent without a prompt and intelligent response by the shippers to the request of the Railroads' War Board to load cars to full capacity.

The report on freight traffic for June was compiled by the Bureau of Railway Economics on returns for twenty-nine railroads having a combined mileage of 125,488 miles, or approximately half the total railroad mileage of the United States.

In June, 1916, these roads gave freight service equivalent to carrying 15,650,194,737 tons of freight one mile, while for the same month this year they carried 19,676,463,348 tons one mile, an increase of 25.7 per cent. Intensive car loading, plus an increase of 13.6 per cent. in the number of miles a day which the railroads have been able to make their freight cars travel, is largely responsible for this excellent showing.

The distribution of empty cars, irrespective of ownership, into districts where they have been most needed, has also helped to increase the railroads' efficiency in handling the abnormal amount of freight that the war has produced.

* * *

Ceramic Society Booth at Chemical Show

The American Ceramic Society will have a headquarters booth at the Third National Exposition of Chemical Industries, to be held in the Grand Central Palace, New York City, Sept. 24 to 29. Members of the membership committee of the society will be in charge of the booth during the exposition week, thru their efforts in the successful membership campaign which they are now conducting making it possible for the society to be represented.

An informal meeting of the society will be held some time during the week, the members to be informed of the date and place when they have been decided upon.

The Central of Georgia Railroad Co. will also maintain a booth at the exhibition and will show Georgia and Alabama kaolins (china and paper clays) as a part of its exhibit. All clay products manufacturers interested in this exhibit are cordially invited by the Industrial Department of the Central of Georgia Railroad Co. to inspect their booths, 236 and 237, at the exposition.

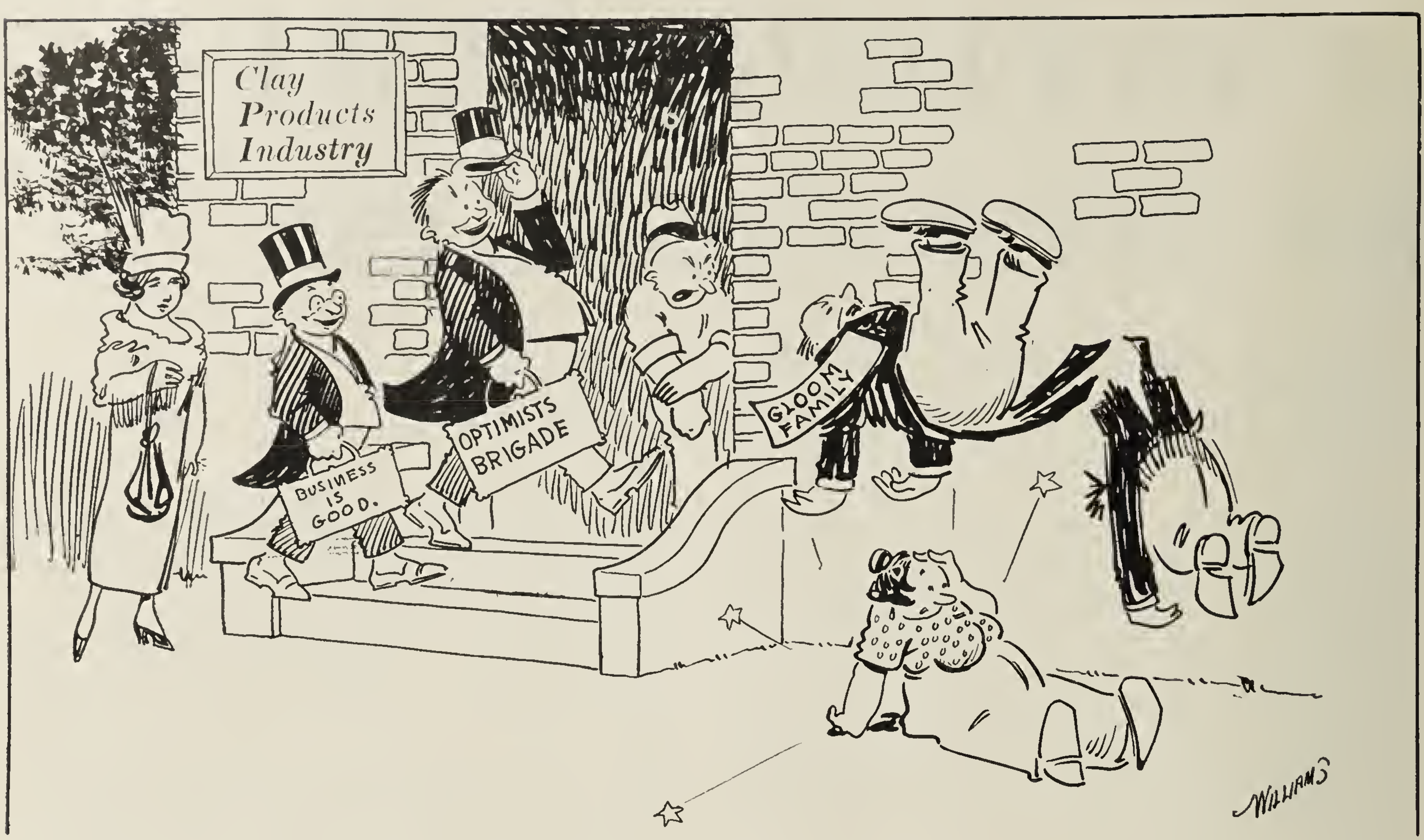
* * *

New Railroad to Develop Clay Plants

Parties who are heavily interested in the newly constructed $250,000 plant of the Municipal Shale Brick & Block Co., of Martinsburg, W. Va., are said to be behind a movement for the construction of a railroad to be located in Martinsburg and Berkeley counties and to be operated by the Berkeley-Jefferson Railroad Co. This railroad is to be thirty-five miles in length, of standard utility line for the carrying of passengers and freight and to cost approximately $10,000,000. It is said that the construction of this road was practically guaranteed before the commencement of the erection of the Municipal Shale Brick & Block Co.'s plant.

In addition to the present plant of the Municipal Shale Brick & Block Co. a still larger plant, to cost a half million dollars, will be constructed on a large tract of land which is now controlled by the Municipal company.

The new railroad will connect with the Cumberland Railroad at Martinsburg and intersect with the Norfolk & Western Railroad. Its construction will play a very



Exit Glooms; Enter Joys. With the Nation for the Most Part Underbuilt, and People Crying for a Roof Over Their Heads, Building Must Break Into Renewed Activity Soon.

* * *

important part in the development of the clay products industry as well as the limestone and iron industry of that locality.

The Municipal Shale Brick & Block Co. is now making and burning brick for its own needs and will continue to do so until the 18,000,000 brick required for the completion of its present plant and the construction of the new plant referred to have been manufactured. Until that time, practically the only brick which the company will sell will be distributed in the local market. To take care of this local demand it has provided delivery facilities.

* * *

Stage Being Set for "Build Now" Drive

Details of a plan of education are being worked out by which the members of the building trades of Louisville hope to be able to convince people of that city that there will never be a better time to carry out building projects than right now. In a sketchy way the plan was outlined to nearly a hundred representatives of all of the building trades at a meeting held on August 28, at Sennings Park, just south of the city. This was a report of a sub-committee named at a July meeting at which the outlook was considered, a committee of which Hermann Wischmeyer was chairman.

The plan is to raise a fund of from $5,000 to $6,000 with which to conduct an advertising campaign that will explain the true situation as to building materials and building costs to prospective builders. An expert press representative and ad man is to be employed to prepare the copy which would have the benefit of an editing by the committee, and a campaign to extend over five or six months would be carried on. It would seek to disabuse the minds of people as to any idea that it is not patriotic to build now and to show that building costs, tho they have advanced, have not kept pace with other commodities and costs. In other words, it is relatively cheaper to build now than it was three years ago. A good deal of the effort also would be directed toward convincing people that there will be no reduction in material costs for years to come, if ever.

The brick men were well represented at the meeting and the plan was seconded by T. Bishop, of the Southern Brick & Tile Co., authorized to speak for the brick and clay products interests. It had been agreed beforehand that the brick men of the city would contribute at least $50 each to the fund that is to be made up by the contractors and all of the manufacturers and dealers in building materials.

* * *

Beg Your Pardon!

Without authority we moved the Smith Brick & Tile Co. from Sheffield, Ia., to Mason City, in the July 31 issue.

C. J. LeValley, one of the incorporators, objects to our taking this liberty and we wish to take this occasion to say that the item which appeared on page 239 of the above issue, should have read as follows:

"The Smith Brick & Tile Company, of Sheffield, Ia., has been incorporated with a capital of $500,000 by C. L. Smith, of Mason City, Ia., C. J. LeValley and George Goppinger, of Sheffield, Ia., and W. L. Harding, of Sioux City, Ia."

* * *

Endicott, a suburb of Binghamton, N. Y., is now in the midst of a record building construction campaign, in which it is asserted that fully a million dollars will be spent for construction, including 350 dwelling houses and $300,000 worth of business structures. It is stated that none of this building is in the hands of speculators, and is the result of a bona fide demand of prospective home owners.

TALK SERVICE

For Thereby You Avoid Casting Aspersions on a Competitor's Product and Service is a Strong Talking Point With a Prospective Customer

By B. W. Figgins

Hydraulic-Press Brick Co., Baltimore, Md.

BY WAY OF INTRODUCTION, this little talk on knocking is based on the assumption that in the first place there is room for it when you find yourself in competition with inferior products which for the time, seem as tho they are bound to carry off the honors of the day. Where both articles bear an equal quality, it is folly to indulge in any criticism. In the early stages of the game, the man who has the responsibility of buying large quantities of face brick is usually a good judge of human nature, and if you resort to such a poor defense of your own product, you are at a disadvantage before you have fairly started.

Ensign B. W. Figgins

The man who sells has many temptations to resort to knocking when he can see inferior qualities in his competitor's product which the prospective customer can't see. This is particularly strong if the inferior quality in the competitor's product is responsible for a lower price. In this instance it becomes necessary for the man representing the higher class article to bring his prospect's mind up to see and appreciate the superior qualities in his brick and not defame the other fellow's product. Of course, we can hardly expect a man, who is loyal to his company, not to state the truth, and draw as much desire for his product as he can possibly get from the would-be customer by honest methods.

Contractors very often put off the buying of face brick for the last thing to be purchased on the job when it should be among the first. In this instance it is usually a case of "I want them tomorrow." To show a man where railroad facilities are in your favor casts no reflection on your competitor's product. It is simply one of the several talking points a man must use in bringing before the public his ability for service. The ability to serve more promptly, due possibly to the fact that his factory is nearer the job, is often a favorable point of argument as regards service for delivery. Possibly you might mention how your cars can be traced from point of origin to destination and the other fellow will not consider it worth while to speak of this in his efforts to clinch the deal.

One of the nicest things which you can lay before a customer is the fact that the brick which you are endeavoring to sell him come direct from the factory which simply employs you as a representative. In this case you have the spirit and heart to talk service from the drop of the starter's flag to the time when the winning brick comes in under the dotted line. In some cities, the different methods of delivery, can be shown as a point of advantage or disadvantage. Where the hauling is done by a teamster, generally recognized for the high class of labor employed by him, it causes your man to readily see that the number of spalls found at the pile will be of much smaller consequence than if his brick are handled by inexperienced or careless labor. Show him that it is better to use tongs than by the old way of picking up an armful and dropping them again in the cart and once more at the pile.

Your competitor might submit a sample which you know he can't produce in the quality and quantity desired, for the price specified. If your sample does show what the real service will run and the doped up one of your competitor does not truthfully portray what he is going to get, ask your man to inspect with you jobs which have previously been built of the two different brick and if you have told the truth on your part against misrepresentation on the other fellow, the old law of confidence in your fellow man will usually decide in your favor.

The foregoing methods of handling competition are but a few of the many difficult positions a man finds himself in when selling. And it is when the rub gets tight and truth is mocked and laughed at that the stamina in a man is called upon to prevent knocking. Sometimes it would do you, oh, so much good just to turn loose a little of the vitriolic talk and scorch the false fringes from the other fellow's cheap and gaudy misrepresentations with which he has decked his product. But it is the best to hold your peace and by gentle yet truthful persuasion cause right to prevail

SOME FRUITS OF CLEAN SALESMANSHIP

By resisting the temptation to knock, a man immediately benefits himself in two and sometimes three distinct ways:

First, overcoming the impulse strengthens your confidence in your own product. If you begin a prompt fire of criticism on sight of your competitor's article it is either a sure sign of uncontrollable anger or that he has you bluffed pale from the start.

Second, when you begin to knock, your customer immediately begins to permit or causes his good opinions of you to wane. You are knocking because you really have an axe to grind. You want to sell and kill off the other fellow's chance of selling. Killing the other fellow's chances by fair means is what a salesman is for. The law of competition causes this, but be careful that you don't kill your own chances in trying to do away with your competitor's.

As a rule a man doesn't like to hear one man run another down. It isn't business. We build up stale jokes on how the women gossip and yet fall right into the same ditch in trying to make a sale. Any business man of consequence admires a man who is man enough to stand on his own bottom. Having been fortunate enough to win the first line of respect is often responsible for your product winning favor. You must make a favorable impression or introduction thru one channel or another before you can bring your brick up on the counter and after you get started, isn't it bad policy to do or say that which would lessen your winning chances?

Third, if you have restrained from knocking and are successful in having won the business you are directly benefited by the order going a part of the way toward keeping the entire organization moving. You feel like throwing our your chest and patting yourself. You have won by fair and square methods. You didn't have to hit below the belt, didn't butt in a clinch, nor were you disqualified for hitting your man when he was down. And if on your way back to the office you chance to meet your competitor from whom you have won the business, you don't have to look for some side alley to turn down to avoid meeting him.

ENOUGH FOR ALL WITHOUT KNOCKING

There is generally business enough to give us our share, provided we work properly for it, and if our competitor acts like a man, there is no reason why you should not shake hands just as cordially with him, as with a good customer. If he belongs to the "Knocker Club" he will cut his way into the wilderness and uncertainty of the cheaper class of trade as sure as he lives. Why? Because good business men will cease to give him a respectable audience, he will lose heart and join the other wolves where his howl finds harmony.

I can cite an instance of a man, who actually went from the top to the bottom of the ladder in a few years. He was representing a fine company in a large city and easily had the bulk of the best trade. He had confidence in his ability to serve, as he knew he had at his disposal the best to be had in his line. During his connection with this company he was recognized as a "clean" salesman and a good business getter. This was because he didn't stop to knock and people unconsciously respected him for it. But he couldn't stand prosperity and the company found it necessary to put another man in his place. He continued to sell brick on his own resources and not having his old line of products behind him he began to lose ground. In his desperation he became a knocker and up to that time he had the respect and good-will of the majority of architects and contractors in town. But as soon as he started in this line of attack he lost favor so rapidly that in less than two years from the date his connection with the company was severed he had literally killed himself from a business standpoint.

Without further theorizing, I can find no argument in favor of knocking. I am sure we can point to no man who has built his castle of success on this quicksand and who has lived in it, in peace ever after.

A little reflection on the part of any man who has the responsibility of selling face brick will certainly cause him to refrain from something which if adhered to long enough, will make him a dead one, and knocking is as strong a business poison as I know of from a selling standpoint.

Men in other lines have a universal respect; why shouldn't the face brick salesman, honor himself, his fellow man and his calling enough to eliminate from his system that characteristic of odious comparisons, knocking.

* * *

Charles G. Stevenson Dies Suddenly

Just at the hour of going to press we have learned of the death of Charles G. Stevenson, president of the Stevenson Company, Wellsville, Ohio, which occurred suddenly on Wednesday, September 5, 1917 at 9 A. M.

This has come as a very great shock, not only to Mr. Stevenson's family and immediate associates in business, but also to the entire clay products industry in which he was so well and favorably known.

The Late Charles G. Stevenson.

The very deepest sympathy is extended to Mr. Stevenson's family on account of his sudden death. He was for so many years a regular attendant at gatherings of clay products manufacturers that on this account also he will be greatly missed.

* * *

War conditions have, and have not, affected building operations in Milwaukee, to quote a paradox. The war has affected the building industry in that it has confined operations to the absolutely needed construction work, creating a condition popularly termed "quiet," but none the less continuing a steady demand for building materials in all lines that has served to keep the dealers busily engaged all season. No cancellations of contracts of any size have been reported.

SPENDING *a* WEEK *at* ILLINOIS' LARGEST PAVING BRICK PLANT

The Second Half of "Steiny's" Letter to Joe, Telling of His Trip to the Purington Paving Brick Company

THE KILNS at the Purington plant are all rectangular and are of two distinct types, the pit kiln, where the fireboxes are located below the floor level, and the ordinary rectangular kiln. You will note the pit from which the fireboxes are fed on one of the photographs accompanying this letter. The floor surface of this kiln and the ground in front of it is even with the rails of the track shown at the left of the picture. This kiln, other things being equal, gives the best burn, since by having the fireboxes below the floor level the whole floor is thoroly heated; consequently, such a thing as immature bottom brick are very uncommon.

The kilns are, on the average, one hundred feet long, twenty-one feet wide, and twelve feet high at the highest point of the crown. The security of the kiln bracing is a very potential factor in prolonging the life of the kiln crown and walls. The average life of a crown on a new kiln has been found to be about twelve years and the life of a repaired crown about six.

The Purington Pit, the Banks of Which Are from Seventy-five to One Hundred Feet High. The Large Steam Shovel Transfers 1,500 Yards from the Sixty-five Foot Strata of Clay to the Clay Cars Each Day.

This plant has discovered a point in bracing their kilns which will not only interest you, but which you might coin into a little tinsel of the realm on your own plant. Formerly I-beams played the star part in holding up the kiln walls, but their persistent propensity for twisting and breaking off at the ground level made it compulsory for a more satisfactory substitute to be found for the job. If you will refer to one of the enclosed pictures, that of the three beams lying upon the ground, you will notice how they twist and wear to a knife-edge thickness at the section where the beam meets the ground surface. Now, instead of using these I-beams for bracing, the company uses double sixty-five pound steel rails in the manner illustrated in that side view of the rectangular kiln. Greater rigidity has been obtained thru the displacement of the I-beam by the rail, and the wear at the ground level is of less importance because of the greater cross section of the rails.

Most of the kilns on the plant have three thirty-foot stacks, one at each end and one in the middle of the side. A few of the kilns have four stacks, but those of three stacks are most in favor.

The floor system of the kilns is quite simple. A main flue about thirty by forty-two inches in size runs thru the entire length of the kiln. A short flue from the side stack ends in this main flue. Distributing flues leading to this main flue are about four inches wide and about twenty-seven inches apart. The flues taper so that at their intersection with the main flue they are about the same height as the main flue, while at the wall the depth of these flues is only about one foot.

The kilns have sixteen dead bottom fireboxes on a side. These boxes vary in size on the different kilns, but practice has determined that those of a size thirty by forty-five inches give best results.

DOUBLE DOORS BUILT IN WICKETS

The kilns are built with two wickets at each end. When ready for burning the wickets are built up with a double door as follows: The inner door is built by laying pavers so that their length lies parallel to the width of the kiln and at a distance of about eight inches the outer door is built by setting the pavers with their ends outward. A peep hole is built in the wicket about six feet from the ground.

One man is in complete charge of the burning at the three plants, and each plant has its head burner. There are three shifts of firemen, each shift having about fifty men. Each man takes care of about sixteen fireboxes. Altogether there are some sixty kilns on the plant. With the exception of one pyrometer connected to five kilns, the progress of burning is followed by settle measurements only. The general procedure of burning is to fire once every hour, shoveling about five or six shovels full of coal into every box each time. The boxes are clinkered once each shift.

Firing but once every hour means that the burners have a long interval between each firing during which time they have nothing to do but to cool off. However, the cooling off could be done in much less time. I asked one of the foremen on the plant why firing every other box at half-hour intervals would not be a better system. This, it seems to me, would insure a more even heat in the kilns. The foreman was not able to give me a satisfactory answer and since I did not get to see the head burner about this point I am unable to comment on this method of burning as I would like to.

BURNING PROCEDURE FOLLOWED

During the early stage of burning the boxes are left open, but after the watersmoking period, which is of about twenty-four to thirty-six hours' duration, depending upon the condition of the brick, the boxes are always kept closed except to regulate the draft occasionally. The kiln begins to settle at the end of three days, when a temperature of about 1,600 degrees Fahr. is reached. On one kiln a settle of one-half to one inch was measured at the end of the first three and one-half days of the burn. The heat is poured into the kilns as fast as they will take it after the watersmoking is over. This is at the rate of about 125 degrees a day. At the end of seven days a temperature of about 1,950 degrees is obtained. This heat is held for two days, or until a shrinkage of eighteen inches is obtained. The kiln is then connected to a waste heat fan for about five days. Three more days of cooling are then required before the kiln can be emptied. The wheelers empty the kiln in about one and one-half days, and the kiln is then set again in about the same time. Thus a complete cycle is made in approximately twenty-one days.

The head burner does no firing, but watches the progress of the kilns in burning. He goes from kiln to kiln and measures the settle from the top of the kiln crowns. Each kiln has six crown holes thruout its length thru which the settle rod, which is calibrated into three-inch sections, is thrust. After measuring each three holes the head burner stops to record settle measurements in his little pocket notebook and, after demounting the crown, he studies the records to see if any section is falling behind. If any part of the kiln has a greater settle than the remainder of the kiln, the head burner would explain to the burners in charge of that particular kiln what procedure to follow.

I'll bet you're wondering how they supply the fuel for the kilns. Well, this is the way they do it. A clam-shell shovel loads coal into a small car which runs on a track located between the kilns. The car is then pushed along the track to the places in need of coal, dumped and brought back again to be refilled. A track of this kind runs alongside all the kilns. When one of these rows has been supplied with fuel, the car is attached to the clam-shell shovel by means of chains and lifted over to the next track, which supplies another kiln with coal.

LOOKING AHEAD—A SOUND POLICY

The storeroom and construction departments maintained on this plant are marvels—I should write you a separate letter on each of these departments. The storeroom is approximately twenty by one hundred feet in size and contains a multitude of drawers and shelves holding extra parts for nearly every machine. There must have been thousands of dollars' worth of steel in this room, judging from the quantity and size of pieces. You could see parts ranging in size from a small tack to a large steel suspension rod for the steam shovel. In a separate room adjoining this building are stored all of the oils, greases and belt dressings required for the plant. The storeroom-keeper gives out no supplies unless he receives a requisition signed by the foreman.

The construction department is housed in a brick structure of seventy by one hundred feet and is equipped with one drill press, one steam hammer, two forges, a double emery wheel grinder, one small lathe, one large lathe and two shapers. Adjoining this building is a wood shop, whose size is twenty-five by fifty feet. Its equipment consists of a band saw, planer drill press, grinder, circular saw, and a lathe. There are six men employed in these buildings, but there are also a number of bricklayers, carpenters, etc., which make up a "rouster squad" which goes about the plant making repairs wherever necessary. All of the wheelbarrows used on the plant are made in this construction department and all machinery and plant equipment is repaired by the mechanics employed in this service.

All new construction work as well as reconstruction work

There Are Two Particularly Advantageous Features About the Dryer Shown Here: Its Sixty-five-Foot Non-Tapering Stack, and the Composition Roofing and Siding, Made of an Asbestos-Cement.

is done in accordance with a well laid out plan which in time will make one large plant out of the separate units with all kilns, dryers, and other equipment of uniform construction.

And now you've got the whole story, Joe. To me getting back on the job again and doing my share of the work in the clay pit, listening to the music of the ponderous machines as I limbered up at the hacker's belt, and holding the whip hand over the Demon Fire feeding his flaring tongue while driving him on to do my bidding, was an experience which stirred in me a surging desire to join you again on the firing line. I hope that this spirit has made it possible for me to describe the huge plants and their methods in a manner not only interesting but instructive and valuable to yourself—as it would be, I hope, to every plant superintendent who had the opportunity to read it.

Maybe, old man, if I showed the chief this epistle, he could see in it an oasis in the Sahara; I hope he does see in it something more than a stiff-back plant write-up, because it contains a wealth of stuff which I believe will be of great value to countless plant owners and superintendents in pointing out the methods followed on a really large plant.

Your Brother Ceramist,

Steiny.

* * *

GOTHAMITES STUDY BUILDING TORPIDITY

PRESIDENT Marcus M. Marks, of the Borough of Manhattan, has set aside Thursday afternoon, September 20, at 3 o'clock, on the twentieth floor of the Municipal Building as the time and place for the mass meeting that has been called under the auspices of the Building Material Exchange of New York to discover whether there is any fixed reason why building construction should not be permitted to proceed during war time, says The Dow Service Daily Building Reports of New York.

This date was fixed following a conference held at the close of the week in the Building Material Exchange at which many of the leading representatives of the building material manufacturers, dealers, and of the Building Trades Employers Association were present and discussed some of the primary hindrances affecting construction. Among the speakers were F. E. Conover, representing the Building Trades Employers Association; Alfred Ludwig, Superintendent of Buildings of Manhattan, former Commissioner of Docks and Ferries; Calvin Tomkins; Frederick Rose, representing the Hudson river brick manufacturing interests; Frank S. Hanley, Secretary of the Eastern Supply Association; F. N. Sprole, representing the National Fireproofing Co.; Mr. McMann, of McMann & Taylor, representing the pipe and valve interests; Arthur B. Pendleton, Secretary of the National Terra Cotta Society, and Mr. Fredenburg, of Fredenburg & Loundbury, representing the face brick and Portland cement interests.

Standing out pre-eminently as causes of the timidity of building money at this time were the three facts that there seemed to be a general impression that building material prices were bound to drop to lower levels, that contractors would soon be able to obtain more reliable delivery dates, and the uncertainty of cost of labor.

Offsetting these conditions facts were brought out to show that the city is under constructed at present, therefore establishing a demand for new construction work, that the best forms of paper security in Wall Street had recently been showing weakness, and that building material prices, probably for a long time, would not drop below present price levels, altho it is not probable that these levels will run to much higher planes. Finally, it was generally conceded that a greater part of the current hesitancy was due to the inability of contractors to obtain delivery dates for structural steel.

There was an impression, however, that once the government fixed the price for steel, that a much greater capacity would be made available for building construction purposes than has heretofore seemed possible. Assurances were given that a notable steel official would be present at the mass meeting as by that time, it was said, there was a possibility that the present tenseness in the metal market would be relieved.

A survey of current building material lists show few indications of any price weakening. Hudson common brick closed a little below the level quoted seven days ago, but the present price of $8 to $8.25 a thousand, wholesale, is in response to the insistency of manufacturers to sell. Raritan common brick is being held on at $8.50 to $9 take-it-or-leave-it-basis. As for the quantity of Hudson brick available the count up the river has not been completed, but early estimates show that there will be more brick on hand than last year at closing time, despite the short-handed conditions at the kilns and the light demand here. This condition is due to the fact that scarcity of labor prevented generous shipments of new brick and there is a large quantity of new brick in kilns that has not yet been burned. Last year the Hudson kilns went into the winter with about 400 million brick in reserve. This year the total will be nearer 500 million, it is estimated.

Portland cement prices will not go below present levels, according to the best advices in the trade. The present level of $2.12, in 1,000 barrel lots, wholesale, to New York contractors is firm and will probably be maintained, altho prices of cotton bags and limestone has again been advanced. This department is taking the lead among building materials in protecting the contractor for the life of the job he orders on. This policy of protecting the contractor on his prices during the life of the operation is one that the mass meeting will attempt to extend to other lines, especially to structural steel.

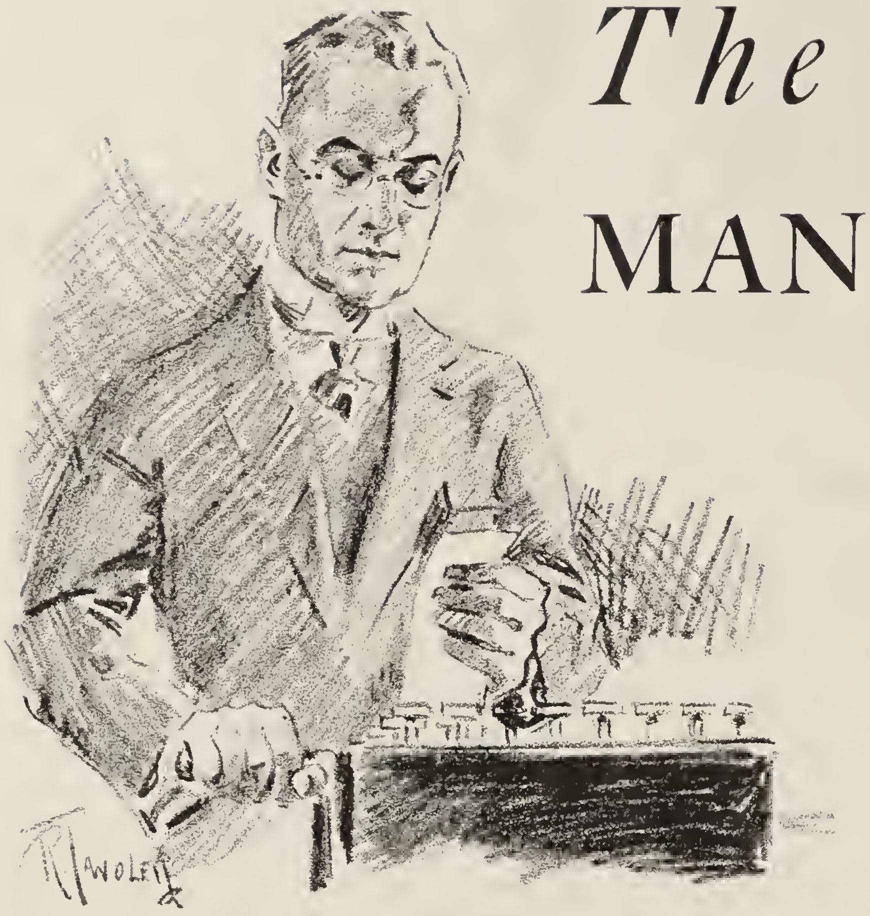
Steel beams in New York are reported at 4.445 cents a pound instead of 4.695 cents last week and 4.669 on August 8. Steel bars are now quoted at 4.195 instead of 4.695 a week ago and 4.669 on August 8. Lake copper is quoted at 25.25 cents instead of 25.50, and electrolytic, N. Y., shows a similar decline on like figures. Spelter is off an eighth of a cent at St. Louis and New York. Lead is reported at 10.25 instead of 10.55 and tin has fallen off half a cent. Tin plate, Pittsburgh, has advanced a dollar and is now quoted at $12.

The general basic building material market is following the lead of steel in the belief that steel requirements for war purposes cannot possibly absorb the entire capacity of the country's mills and that deliveries for building will be more dependable in the future.

* * *

N. P. B. M. A. Directors' Meeting Announced

It is announced that the quarterly meeting of the board of directors of the National Paving Brick Manufacturers' Association, will be held at the general offices at Cleveland, September 30.



Adding Machine on One Hand, Calculating Device on the Other, Barnes Was Running Up and Down Columns of Figures and Examining the Results With a Critical Eye When the Buzzer Sounded With a Long Subdued Note.

The GENERAL MANAGER LEARNS SOMETHING ABOUT FREIGHT RATES

Barnes Explains in Detail His Infallible Error-Detecting System of Checking Freight Rates

By G. W. Greenwood, M. A. (Oxon)

Secretary, United Fire Brick Company,
Uniontown, Pa.

ADDING MACHINE ON ONE HAND, calculating device at the other, Barnes was running up and down columns of figures and examining the results with a critical eye when the buzzer sounded with a long subdued note. Waiting until he had reached the foot of one of the columns, he stepped into the General Manager's office and greeted him with a smile.

"Are you very busy, Mr. Barnes?" asked the G. M., returning his smile.

"Yes, and no. I am hunting for a discrepancy in my results, but at the same time I feel that I will find it sooner if I lay the work aside for a time and forget it."

"Then here's your salvation in the forgetting line. You remember our conference a long time ago on the subject of averages, since which time I have been fighting shy of them. I have come to the conclusion that the average man had better let averages alone."

Barnes got out his knife and the G. M. handed him a nice soft piece of a pine board, remarking: "I remember reading when I was a boy in one of Cooper's novels how the landlord of a tavern provided his guests with sticks to whittle to prevent their mutilating the building. So in this pigeon hole I have placed a supply for your benefit."

A PROBLEM IN AVERAGES

"Thanks," said Barnes, accepting the proffered stick. "Just as a reward, I'll give you a little problem on averages which was put up to me recently. Two boys had fruit stands, and each had a stock of sixty apples. One sold them two for five cents, the other three for five cents. That would be one dollar and fifty cents for the first boy and one dollar for the other when both stocks were sold out. Another boy bought them both out and began selling five apples for ten cents. That would be the same as two for five and three for five, the way they had been selling prior to the consolidation, wouldn't it?"

"Looks that way," admitted the G. M., "but in discussing such subjects with you I feel pretty much like the man who said, 'I won't admit anything until I find out what you are going to prove!'"

"That isn't half bad, either, where figures are involved. In the case we are considering, the purchaser found that when he had sold all the one hundred twenty apples he had only two dollars and forty cents instead of two fifty. How do you make that out?'

"Easy. It just means that two firms don't make as much after a consolidation as they each made before, when they were both attending to the job. Ask me something harder. But what I have been sizing up just now is this: I find at the end of the sales reports for each month, as far back as I have gone, the average freight per thousand, nine-inch equivalent. Is this deceptive, like the average selling prices of the different brands taken together?"

FREIGHT MORE DECEPTIVE THAN SALES AVERAGES

"You're making progress in accounting all right," commented Barnes, enthusiastically. "The average in the case of freight charges is just as deceptive as in the case of selling prices, only more so. Suppose the average for one month is five dollars per thousand and the next month three. Your predecessor would under such circumstances congratulate himself on a lowering of average freight costs by two dollars per thousand, not realizing that in the month showing the lower average there might be enough errors to pay a traffic man a good salary."

"That's just what I had come to suspect. Now, what is the remedy? Can you find it as easily as the center of gravity of the stick you are trying to balance on the end of your knife blade?"

"I can find it a whole lot easier," asserted Barnes, giving the stick a whirl round and round. "Every single sale must be handled separately. Yes, it takes work, but it also takes work to grind clay and to fire kilns, and the finding of these base costs is just as necesary in the marketing of brick. In the first place, no order is taken without our knowing the freight rate to destination—how else would one quote so as to cover it? This rate should be inserted in the shipping advice when it is made out, and placed on every sale applying to this advice. Then, also, each sale should contain the estimated weight, taking the weight of each item shipped. Then a bill of lading should be secured from the railroad showing the railroad weight and the freight rate. This information should appear in tabulated form at the bottom of each sale, something like this," and laying aside his stick, Barnes borrowed the G. M.'s pencil and wrote down the following:

Est. Wt. ....
R. R. Wt. ....
Rate ....
Freight ....
Paid ....

"What's the idea of the estimated weight?" inquired the G. M. "It seems to me that since the railroad weight determines the amount of the accruing freight charges, working up the estimated weights is just that much additional labor."

ESTIMATED WEIGHT SERVES DOUBLE PURPOSE

"The estimated weight is needed for two reasons," explained Barnes. "In the first place——"

"In the first place," interrupted the G. M., "allow me to swap with you this nice soft pine stick for the pencil upon which you apparently have designs, and which in another few minutes would be worth about as much as a claim against a railroad for a concealed loss of brick in transit."

Barnes sheepishly handed over the pencil, resumed his stick, and continued: "We must have these estimated weights in order to distribute the estimated freight charges among the different classes of brick when several different kinds are shipped in the same car. There is no way of getting around this which will serve the purpose equally well. Then there is another reason. Railroad weights are not infallible. By inserting the railroad weight directly under the estimated weight and very great discrepancy stands out like a boulder on the prairie. For example, a few days ago the railroad made a mistake of about 35,000 pounds on a shipment of Bonus nine-inch straights. The estimated weight was 76,125 pounds and the weight reported by the railroad company was 110,000 pounds. Of course, the difference was noticed at once."

"This question of long and short weights reminds me of the butcher to whom a man complained that he didn't like the short weight he got for his money. The butcher declared it was nothing to the long wait he got for his money before he could get it from the man who was making the kick. Now, in the case you have just referred to. Is there any chance that we will ever get this money back? Has a claim been made for it?"

HOW THE ERROR WAS PROVEN

"It's dollars to doughnuts that we will get the money back from the railroad, but we could not get it by lying in wait, as your butcher friend was accused of doing. We have to get busy. In this instance, we took the three cars of Bonus nine-inch straights shipped prior to the car in question and the car shipped later, making all the cars of this material we had shipped from this plant during the month so far. We took the average for each car separately, so as to show the extreme variations under normal conditions, and then took the average

Just Then Jimmie, the Office Factotum, Handed Mr. Barnes a Letter from the Commercial Freight Agent, Whose Office Was Located in the Same Building, At Which Barnes Glanced and Then Handed to the G. M.

for these four cars taken together, and thus showed that the car in dispute is away out of line. Just a minute, and I will give you the exact figures."

In a few minutes he returned with the following tabulation:

10,000	bonus 9-inch straights,	71,000 lbs.,	average	7.10	each
9,000	bonus 9-inch straights,	65,000 lbs.,	average	7.22	each
11,000	bonus 9-inch straights,	76,800 lbs.,	average	6.98	each
10,500	bonus 9-inch straights,	110,000 lbs.,	average	10.48	each
8,500	bonus 9-inch straights,	61,000 lbs.,	average	7.18	each

"Looks to me as tho the man who weighed the fourth car had his foot on the scales," remarked the G. M. "You say it should have weighed about 76,125 pounds?"

"I said that was our estimated weight. The actual weight should always be less than our estimated weight, because we intentionally make our estimates high. By taking off a little more than we should, we show on our sales reports base prices a little less than we are really getting, so that we are always a little better off than we appear to be."

"That is certainly conservative, and I imagine it must be good accounting or you would not indulge in it. But if we cannot use our own estimates of the weight of the car, to what source shall we turn? How do we get back at the railroad company?" inquired the G. M., tilting himself back and forward in his chair.

"The only fair way is to take the railroad weights of other cars. Here, by taking the four cars which show but little variation, we find that 38,500 Bonus nine-inch straights weighed 273,800 pounds, an average of 7.11 each. Using this figure as a basis, we find that the correct weight should be something like 74,650 pounds," explained Barnes, gathering up a pile of shavings and dumping them into the waste paper basket.

SMALL CHANCE FOR DECEPTION

"It looks fairly simple," said the G. M., thoughtfully scratching his head. "But it looks also as if there might be an opportunity for some unscrupulous manufacturer to make false claims and thus secure refunds in his freight charges. Doesn't the railroad take chances in accepting our statements as to the contents of the various cars?"

"Let any manufacturer attempt this method of cutting his freight costs. He will soon find himself wearing a suit of clothes which will make him look like a chocolate and enamel brick exhibit. But the railroads do not leave everything to chance, or to the conscience of the brickmaker. They examined our records and then went to the plant and looked over the wheeler's tallies to make sure our records were correct. Then they weighed ten brick taken at random, using small grocer's scales, to get an independent line on the weights of individual brick. They cross-examined the consignee to make sure we hadn't by some chance shipped him 15,000 brick instead of 10,500. So far as I can see, they have left no stone unturned in verifying our claim."

"You mean they have left no brick unturned," facetiously suggested the G. M. "But now when are we to get our money back?"

Just then Jimmie, the office factotum, handed Mr. Barnes a letter from the Commercial Freight Agent, whose office was located in the same building, at which Barnes glanced and handed to the G. M. "Here is our answer," he said; "they have corrected the weight and their billing so that the correct freight will be collected to begin with and there will be no formal claim. It is a case of prevention instead of cure. It is always a lot better to get a billing corrected than it is to have to go thru incorrect and then make a claim after the bill has been paid."

"Well, Mr. Barnes, this has been of considerable interest, and I am glad to have a look into the processes used to protect our freights. Some other day I want to know something about the lines devoted to the rate, amount, and payment as indicated in your scheme. But now I suppose you have completely forgotten the problem on which you were brooding when I rescued you an hour ago."

"Indeed I haven't," said Barnes, with a broad smile. "I was trying to find why adding five per cent. to a string of costs wouldn't give the same result as I get if I deduct five per cent. from the output, to cover loss in breakage. And during our discussion I have sub-consciously ferreted it out."

"I'm decidedly glad to hear it. I was just beginning to fear you were going to spring it on me. Here, catch," he called, tossing Barnes a fresh whittling stick as he was starting for his own office. "It will make less wear and tear on your umbrella handle, and do your sub-conscious mind just as much good!"

⁂

From Clay Deposit to Corn Field

When President Wilson asked the country for increased food crops, Manager S. E. Cullum, of the Minnesota Clay Works, Inc., at Morton, Minn., decided to utilize thirty acres of idle land held by the company as reserve clay deposit. The field was under flood water until late in May, but early in June he had it plowed and planted to carefully selected seed corn. By August the prospects for a harvest were as shown in the illustration, which pictures one of the finest fields in Minnesota's corn belt.

S. E. Cullum and Son, Norman, In One of the Finest Corn Fields in Minnesota. Formerly It was a Barren Tract Held as a Reserve Clay Deposit.

Mr. Cullum is doing a bit in other ways, too. He is Deputy Sheriff, acting without pay upholding law and order in this part of Redwood County—including an Indian Reservation. With him in the picture is his son, Norman E. Cullum, mechanic in the First Minnesota Artillery.

⁂

First Shipment of U. S. Brick to Europe

"Orders for 350,000 Hudson River common brick, placed, filled and shipped last week to France, have an ominous bearing upon the future cost of construction in the metropolitan district of New York," says the Dow Service Daily Building Reports which, continuing, says:

"That brick, made by one of the best equipped manufacturing plants in the North River district and carrying a three-letter brand, will cost the contractor $80 a thousand set down on a French pier, and yet this is said to be only the first result of an inquiry for American common brick for European export running more than a year and a half.

FIRST SHIPMENT

The significance of this epochal order is made more apparent when it is known that this is the first shipment of common brick across the ocean since the time brick was imported from Holland to build Independence Hall in Philadelphia, and Fraunces' Tavern in New York. Never before has a genuine European order for American common brick been filled. The brick just shipped is to be used in the construction of gigantic refrigerator and cold storage plants.

Beginning this week more Hudson River brick plants will close down. The slight drop in the price of Hudson commons last week to $8 and $8.25 from $8.50 and $9 was due to the sacrifices made by brick manufacturers who needed "quick" money before the first of the month, in order to close their establishments and release their men. It was the opportune moment for New York, lower Connecticut and New Jersey building material dealers to load up on fairly good brick at a price which probably will not be so low again for a long time.

"The result was that as the week closed there were only nine barges left in the New York market, with options out on three of these."

HINTS *on* SALT GLAZING

THE GENERAL PROCESS OF SALT-GLAZING sewer pipes and similar articles is known to many of our readers, says "The British Clayworker," but difficulties frequently arise thru ignorance, or thru overlooking some point of importance.. Expressed very briefly, the theory of the process is that of a chemical reaction between a weak salt and a strong acid, the former being the sodium chloride, or "common salt," thrown into the kiln while the clay and any finely divided silica in it act as the strong acids which decompose the salt, forming a new compound of soda, clay and silica, and setting free hydrochloric acid, which passes away as vapour and partly as "pungent fumes." In all chemical reactions there are certain requirements, of which the most important in the case of salt-glazing are:

(a) Sufficient material, intimately mixed or applied in a suitable manner.

(b) Sufficient heat to maintain the materials at the required temperature.

(c) Sufficient time for the desired reaction to occur.

(d) Means for carrying away one or more products of the reaction, which would stop its progress if they were not removed.

Taking these in turn, we shall find that there is seldom a lack of material, and that it is only rarely that salt-glazed articles are defective because of insufficient salt being present. With new plants, or plants just starting the manufacture of salt-glazed goods, the clay is sometimes deficient in silica, and where this is the case a suitable quantity of fine silica dust must be added to the clay of which the goods are made, or a slip must be made by mixing this dust with clay and water in suitable proportions and applying it to the articles.

Most errors are made thru an insufficient temperature being reached during the application of the salt-particularly in the later stages, when two or three different saltings are given. Hence we must presently pay special attention to the burning of the goods.

Some glazers hurry the kiln, especially towards the end, and do not give the salt and clay time to react on each other. This is another defect in the burning, productive of unsatisfactory results.

Ventilation of the kiln during the salting is another important matter, and is also connected with the burning. The success or failure of the glazing, therefore, depends chiefly on the management of the burning, and it is in this that the chief mistakes are made. As the burning is, in its turn, dependent on the manner in which the goods are placed in the kiln, it is important that the setting should be rightly managed.

SETTING OF WARE IMPORTANT

In a properly filled kiln for salt-glazing there will be a uniform draft in every part, the kiln gases travelling as rapidly thru the pipes as around them. If this is not the case in any particular kiln, the inside of the pipes will be imperfectly glazed, or they may be entirely destitute of glaze. On seeing such a kiln, a skilled salt-glazer would remark that it had been "set too open," and he would take measures to see that the passage of the gases around the outside of the goods was checked in some way while the draft inside the goods was maintained as before. One method of doing this is to cover the floor of the kiln between the pipes with bricks or tile, so that the kiln gases cannot pass thru these portions, but must perforce pass thru the pipes. This checking must not be overdone, or the reverse trouble will occur, and the outside of the goods may be devoid of glaze, while they are well finished inside. This latter defect is, however, seldom experienced. When one part of a kiln habitually shows a defective glaze on the goods some effort should be made to increase the draft at that part, either by "opening" the goods there (that is, by placing them further apart) or by checking the draft in some neighboring part of the kiln, and so forcing the kiln gases to travel more thru the defective part of the kiln. The latter method is generally preferable to the former, because open setting reduces the capacity of the kiln, and this has a serious effect on the cost of burning and glazing the goods.

Assuming that the setting of the goods is satisfactory, let us now turn to the burning. In the first place, the goods are composed of clay which has been dried, but which will give off a large volume of water when they are heated somewhat short of dull redness. This water begins to come off as soon as the goods are warmed, but its evolution continues until all the true clay in the goods has been decomposed. As to the nature of this decomposition we need not concern ourselves at the present time, as it does not affect the salt-glazing. So long as the heating is very slow and the ventilation in the kiln is sufficient, no special care is required. These are precautions required in burning any kind of clay ware, and do not differ in any way as regards salt-glazed goods. Too rapid heating at this early stage will cause the goods to crack or, in less rapid heating, to loosen portions of the surface, which show in the glazed goods as blisters. This is not the only cause of blistering, but it is one of the commonest. Another defect which is produced in the first stage of burning consists of cracks in the sockets of the pipes. These are usually due to the goods either not being sufficiently dry when taken to the kiln, to their being placed unevenly, so that they are pressed too much in one part by the pipes above them, or to the water in the pipes being driven off too rapidly in the kiln.

FAULTY WATERSMOKING MAY CAUSE BLISTERS

In some kilns the water driven off one portion of the pipes is condensed in another part of the kiln. If it is re-evaporated too rapidly it may cause blisters; the bottom pipes in a down draft kiln are especially liable to this defect if the first stage of burning is too rapid. It may be prevented in very difficult cases by using a chimney which is also employed for a boiler or for other kilns, so as to secure a steady draft from the very commencement of the firing. If no such chimney is available, an opening should be made at the base of the chimney shaft, a coal fire lighted in it, and the hole bricked up again.

The second stage of the burning consists in heating up the clay and in burning out any combustible matter which may be present in it. This requires a considerable amount of time and patience, and if it is unduly hurried or the kiln taken to the next stage before this one is complete, there will be trouble in the form of black cores and discolored ware. Experience alone will tell how long this heating stage must last, tho a good idea can be obtained by drawing out a few pieces of broken pipe which have been placed in convenient positions in the kiln for this purpose. On breaking these trials and examining the fractured surface it is easy to see whether any black carbonaceous matter still requires to be burned out. If so, the heating must be continued slowly till this is accomplished.

The end of the heating period is reached when a broken surface of the material of which the goods is made is found to be slightly vitrified. That is to say, when this surface shows that sufficient fusion has occurred to partially fill the pores with the fused material. It is necessary to break a piece of the material and observe the fracture, as the slight glossiness which occurs on the outside of a piece of ware is not conclusive. No determination of the temperature will be of much assistance at this stage, for vitrification occurs at different temperatures with different kinds of clay. By far the best method is to withdraw trial pieces from the kiln, break them, and examine the fracture for signs of fusion. Sometimes it makes an easier test if a little water is poured on the fractured surface. If no water is absorbed, it may usually be assumed that the heating has been sufficient for the goods to be taken to the next stage in the burning.

It is useless passing to the salting stage until it is certain that the heating stage has been properly finished. One of the commonest failures in salt-glazing is due to trying to salt before the necessary changes have occurred in the clay; that is, before the heating has been sufficient. In fire clays, where fusion is difficult to attain, it may be necessary to add some very fine dust sand or a little fusible clay in order to produce a satisfactory material, tho some pipe manufacturers obtain good results by heating the pipes to a higher temperature than is really necessary.

CONDITION OF FIRES FOR SALT GLAZING

When the goods have been sufficiently heated, the fires are fed so as to put them into a good condition for retaining their heat for a long time, the fuel being kept well to the front of each fire box, and in a good glowing state. a shovelful of salt is then thrown well to the back of each fire, and the fuel is pushed towards it, and fresh coal added, so that there will be no chilling of the contents of the kiln. The heat causes the salt to decrepitate or jump about, and it is carried by the draft of the kiln on to the goods. As an even coating of glaze is desired, it is obvious that the more uniform the draft in the various parts of the kiln, the more likely is the glaze to be satisfactory. To aid this most burners lower the damper leading to the chimney, and afterwards raise it when they judge that all the salt has left the fire. The smaller the proportion of air entering the kiln, the darker the color of the glaze. Light glazes are obtained by admitting plenty of air, but they unavoidably waste a large amount of salt, which is carried off by the stronger draft.

After the salt has been added it should be allowed sufficient time to combine with the clay and form the glaze. This combination is accompanied by a serious reduction in the temperature of the kiln. This loss of heat must be made up by putting more coal on the fires and reheating the kiln until it is again as hot as it was when the salt was first added. Many salt-glazers fail to get the kiln hot enough the second time, and so do not improve the quality of the glaze, no matter how many doses of salt they administer. It is, indeed, a very difficult matter to know when the kiln has again reached the requisite temperature. Cones and pyroscopes are practically useless for this purpose, electric pyrometers are not by any means satisfactory, and so the burner is largely reduced to the use of his own judgment in the matter. If two additions of salt do not prove satisfactory, it will usually be found that the burner is unable to judge whether the kiln has regained its original temperature after each salting; the use of six or seven doses of salt, customary in some places, is a sign of incompetence on the part of the burner.

When the kiln has regained its former temperature, the second dose of salt is added in the same manner as the first. After a quarter of an hour or so trials may be drawn and examined; if they appear to be well glazed the kiln may be finished, otherwise the kiln must be reheated and a third dose of salt given, this process of reheating and salting being continued as often as necessary.

When good, glossy trials have been obtained the finishing of the kiln may be commenced. This consists in continuing the heating so as to "fix" the glaze on the goods. No matter how glossy the trials, if the kiln is finished badly the cold goods will be dull and irregular in tone. The usual method of finishing consists in maintaining the heat until all possible reaction between the salt and the clay has been completed, and then allowing the kiln to cool very slowly. It is usually found that the drop in temperature after adding the salt is such that the kiln must be reheated to the temperature it had before the last salting if a good, glossy finish is desired. The duration of this final heating must not be too long, or the glaze will be dulled; what is needed is a sharp, rapid rise in temperature, which, while melting the glaze and causing it to flow uniformly, will not heat it to such an extent as to cause partial volatilization of the soda in it, with resultant dullness of surface.

The only part of the cooling where mistakes are likely to be made consists in opening the kiln too soon. If rapid cooling is desirable, caps may be taken off the top of the kiln and the chimney damper may be raised, so as to draw a gentle current of air through the kiln, tho the latter procedure is somewhat risky. To open the wicket, even partially, is always risky, and should never be allowed with salt-glazed goods.

* * *

Who Makes "Aerlock Brick"?

The Editor has received a request for the name of the manufacturer or manufacturers of "Aerlock Brick." If parties answering this description will kindly get in touch with *Brick and Clay Record,* we will be very much obliged.

Constructional Work Going On on a Part of the New Unit Being Added to the Onondaga Pottery Co.'s Big Plant.

WAR STIMULATES POTTERY INDUSTRY *at* SYRACUSE, N. Y.

Effect of Decreased Imports Felt Particularly at Onondaga Plant, Where Rapid Expansion Is Taking Place

TURNING DOWN a $60,000 order is an unusual event in the life of any business concern. But that's only one of the many unusual events occurring almost daily in the pottery industry in Syracuse, where between thirty-five and fifty per cent. of the nation's china ware is made.

Never before in the history of the industry here have conditions ever approached those now prevailing. Orders that in ordinary times would have made the general manager jump from his chair with yells of delight are being refused daily without the flicker of a eyelash. Plants are being altered, improved, enlarged, built over, and, in some instances, whole new factories erected in a feverish effort to increase the capacity, but the orders for more pottery flow in, and even with the increased output it is absolutely impossible to keep even.

Help is scarce, the demand far exceeding the supply. Army enlistments and the draft have made inroads on working and sales forces to the extent that an acute scarcity of skilled labor is feared.

The war is to blame for it all.

French and British importations, domestic manufacturers say, have been reduced to a small percentage of the antebellum volume while the supply from Germany and Austria has been cut off entirely. Added to this is the fact that for some unexplained reason a wave of "buy American made pottery" sentiment has set in among the trade. Retailers report that many customers refuse even to look at German made goods, demanding they be shown American products. Some large purchasers who formerly took only foreign made ware have turned about completely and insist on domestic, even at an inconvenience and delay to themselves.

This condition is nowhere more apparent in Syracuse than at the plant of the Onondaga Pottery Co., the largest of its kind in this section, where the erection of a new manufacturing unit is under way which will increase the company's output thirty-three and a third per cent.

E. L. Torbert, general manager of the company, declares that with this addition in working order the output of the company will reach a total of 7,800,000 pieces of china of various sizes for the year ending December 31, 1917.

At present there are between six hundred and fifty and seven hundred persons, more than forty per cent. of them women and girls, employed at the pottery. As a result of the enlargement of the plant a considerable increase in the working force will take place.

BATTERY INCREASED TO SIXTEEN KILNS

Including equipment, the new unit, a four-kiln plant, will represent an investment of $150,000. At present the company is operating three units of four kilns each, so that with the completion of the expansion work there will be sixteen kilns for firing china, each kiln having a capacity of from three thousand to three thousand five hundred dozen pieces. The new addition will be ready for operation, at least in part, this fall. It consists of the following structures, in which brick is the principal material: One building four stories high, 40 by 130 feet; two buildings four stories high, each 40 by 90 feet; one building two stories high, 40 by 90 feet, and one building one story high, 40 by 90 feet.

The four new kilns are being built in the two latter buildings.

The Onondaga pottery output constitutes thirty-five per cent. of the total vitrified china made in America, and, despite this enormous production, the demand far exceeds production. Under normal conditions about seventy-five per cent. of the china purchased in this country comes from Europe, but the supply from that source has been practically cut off by the war.

However, it is not alone for the purpose of meeting the extraordinary conditions created by the European conflict that the company is making a thirty-three and one-third per cent. extension in its production facilities, Mr. Torbert said, in explaining that the natural growth in domestic trade also makes plant expansion necessary. The new Pennsylvania Hotel in New York City, which is to be the largest hotel in the world, will use Syracuse china in all its dining rooms and restaurants, and the Onondaga pottery is now working on the immense order, which must be ready for delivery next spring.

Not only the virtual suspension of importations of china, but the entry of the United States in the world war, also has been a factor in sending activities at the Onondaga pottery to the limit of capacity. According to H. R. Torbert, advertising manager of the Onondaga Pottery Co., the volume of orders for undecorated Syracuse china for use at permanent army camps is large.

OTHER SYRACUSE POTTERIES RUSHED

Similar conditions of lack of capacity exist at the Pass and Seymour plant, at Syracuse, where an entirely new factory is being rushed to completion which will increase the firm's output by fifty per cent. This new plant will cost $150,000, and will be ready for occupancy by September 1, this year.

J. W. Brooks, assistant general manager of the company, reports an unprecedented volume of orders. He gives as the cause the prolongation of the war, chiefly, and the strike in the New Jersey factories as secondary. The company is far behind in its orders; it is taking no contracts at all for immediate delivery and turning down thousands of dollars' worth of business for the simple reason it cannot handle it. Similar conditions are reported at the smaller concerns in Syracuse.

◆ ◆ ◆

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

The Sixth of a Series of Articles Designed to Help the Budding Traffic Manager

By Sydney A. Hale

SYNOPSIS: Freight rates are a direct charge upon every business. The law charges every shipper with knowledge of the legal rates and penalizes him for failure to observe such rates. The basis of all rate-making is the freight classification. Out of this grows the basic class rate. To care for the special conditions where these rates may not be equitable, carriers make individual changes in the classification by what are known as exceptions. The greater number of special conditions, however, are, as explained in this article, covered by special rates known as commodity rates.

A COMMODITY RATE is fixed in a normal case when under the particular facts special treatment not afforded by the classification is required.—Eastern Live Stock Case, 36 I. C. C., 675.

COMMODITY RATES EXCEPTIONS

Classifications, which are controlling in the establishment of class rates, must, of necessity, be general. Covering upwards of 10,000 articles, it is patent that any attempt to go into minute details so as to conform to all the different varieties and conditions of traffic would lead to multiplication in the number of classes that would defeat the real purpose of the classification. It is recognized, however, that, while the classification may be fair as a whole, special circumstances require special treatment. One means of taking care of the situation is thru exceptions. The more general method, however, is thru the medium of commodity rates.

While a class rate applies to all articles rated at that class, the commodity rate is specific. Commodity rates "are, in essence, exceptions, to the classification based upon a belief in the economic expediency of such a course," but, generally speaking, they are more limited in their application, altho not in the volume of tonnage moved, than exceptions proper. Commodity rates are lawfully applicable only to the articles specifically named in the tariff containing such rates and only for the specific movement or movements covered by the tariff. Their application can not be extended to analogous articles, no matter how great the similarity may be.

BASIC RULE GOVERNING COMMODITY RATES

The cardinal rule with respect to commodity rates is thus stated by the commission:

"In every instance where a commodity rate is named in a tariff upon a commodity and between specified points, such commodity rate is the lawful rate and the only one that may be used with relation to that traffic between those points, even tho a class rate or some combination rate may make lower. The naming of a commodity rate on any article or character of traffic takes such article or traffic out of the classification and out of the class rates between the points to which such commodity rate applies."

As has been stated, the application of a commodity rate cannot be broadened by interpretation to cover analogous articles. Neither can it be extended to stations not named. This inflexibility of application, however, may not be used as a vehicle of discrimination. If carriers see fit to establish commodity rates between two points, they may not, under the fourth section of the Act to Regulate Commerce, lawfully exact higher charges from or to intermediate points.† Two courses are open: the tariffs may provide that the rates will apply to intermediate points not named or they may carry a clause that rates not exceeding those named will be established to or from intermediate points upon reasonable request. Rates so established may be made effective upon one day's notice.

To recapitulate the steps in the commodity application of rates:

1. A class rate applies in the absence of any other rate.
2. An exception to a rule or rate takes precedence over the rule or rating named in the classification.
3. A commodity rate takes precedence over all other rates, whether specific class or rates by exceptions to the classification.

COMMODITY RATES AND CLASSIFICATION

While it is true that a commodity rate takes an article out of the classification, its making is not wholly independent of the classification and class rates. In many instances, commodity rates are made on a basis of a fixed percentage of the class rates, but "so many elements enter into the determination of every commodity rate that it can not be said that a commodity rate must always have a fixed relationship to the class rates, even as between competing points."

Many commodity tariffs carry the notation that they are subject to the classification and exceptions. Under such circumstances, where the tariff is silent, the classification will speak. Commodity tariffs, however, are subject to the classification and exceptions only to the extent stated in the commodity schedule. Where there is conflict between provisions in such tariff and those in the classification, the tariff will prevail. In a leading case on this point, a tariff with the blanket provision that it was subject to the classification "except as otherwise provided herein" named a rate of $2.20 on "furniture (new), all kinds." A rate of $3.00 was charged upon a shipment of show cases on the ground that show cases were provided for separately in the classification and hence did not come under the tariff description. The Commission held that the $2.20 rate applied. "If the defendants desired that the application of the commodity rate should be restricted to the carload list of furniture in the classification, they should so stipulate in their tariffs."

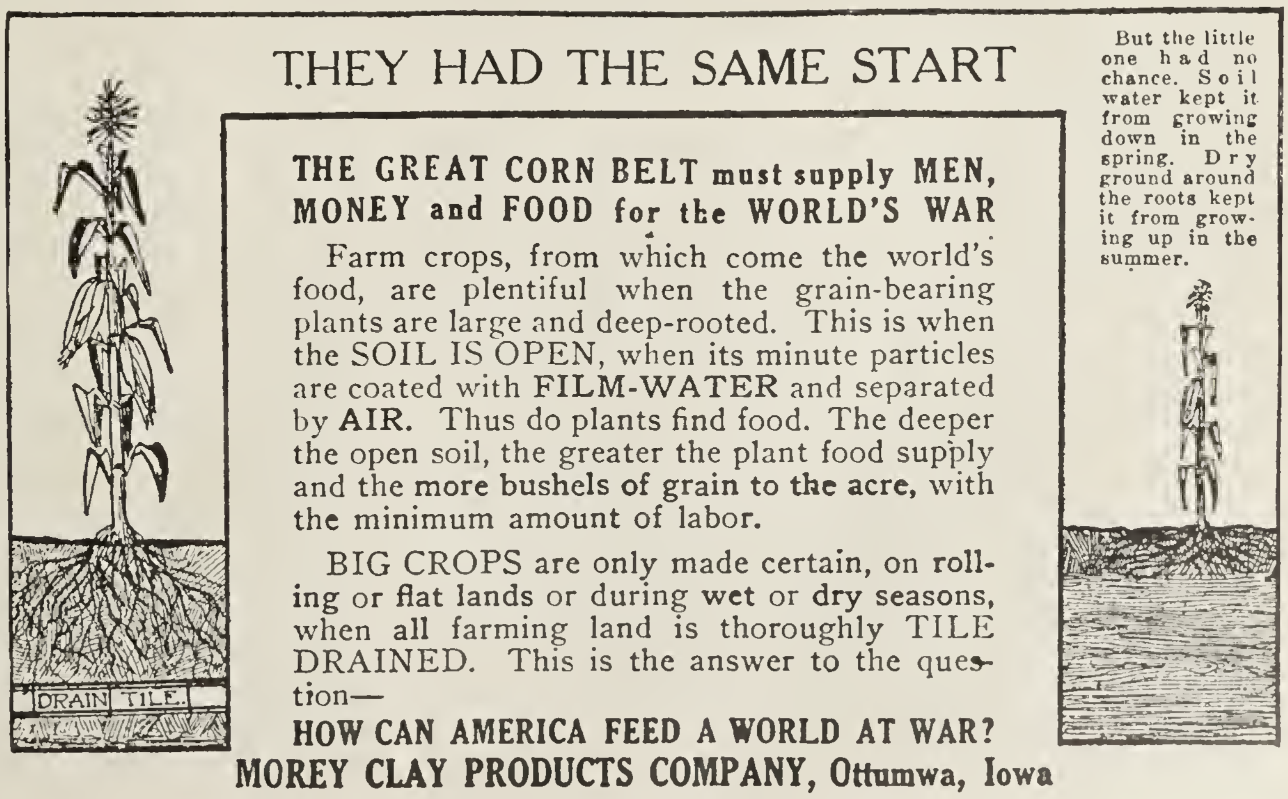
In general rate-making the class rate is the highest rate for the movement of traffic. As a rule, an exception to the classification operates to make a lower rate. In theory, the commodity rate, specific in its application both as to the traffic it covers and the movement it controls, is lower than either class rate or rates made under exception sheets. The fact that a commodity rate may be higher than the class rate on the same article, however, is in itself not unlawful, altho it is considered an abnormality that demands special justification. Were commodity rates not generally lower there would be little call for their establishment. Class rates and classifications are made to take of the general movement of traffic. Exceptions are a step towards specific rate-making, while the commodity rate is the specific rate, made for particular traffic, usually moving in heavy volume. Once established it is the lawful rate, regardless of the fact that use of a class rate might make a lower charge.*

The rule last stated, however is subject to one exception that in itself is a recognition of the idea that the commodity rate should be the lowest—an aid to the movement of traffic, not a penalty. Peculiar conditions creep in, particularly in the making of rates on a larger number of commodities moving over a wide area, where the commodity rates may be higher in some instances than the class charges. The exception permits the publication of class and commodity rates in different sections of the same tariff and the incorporation of a rule that, if the class rates make a lower charge, they may be applied.

TIME *to* SELL DRAIN TILE

Rapidly the Summer Crops Are Being Cleared from the Nation's Fields, and, as the Work of the Harvest Season Draws to a Close, the Farmer Turns His Attention to the Production of Bigger Crops Next Year for What He Knows Will Be an Eager and Profitable Market.

What Are You Doing to Show Him the Important Role of Drain Tile in Increased Production? The Card Illustrated Here, Sent Out by the Morey Clay Products Co., Carries a Pretty Forceful Message. It's Time to Sell Drain Tile, So Get Busy.



THEY HAD THE SAME START

But the little one had no chance. Soil water kept it from growing down in the spring. Dry ground around the roots kept it from growing up in the summer.

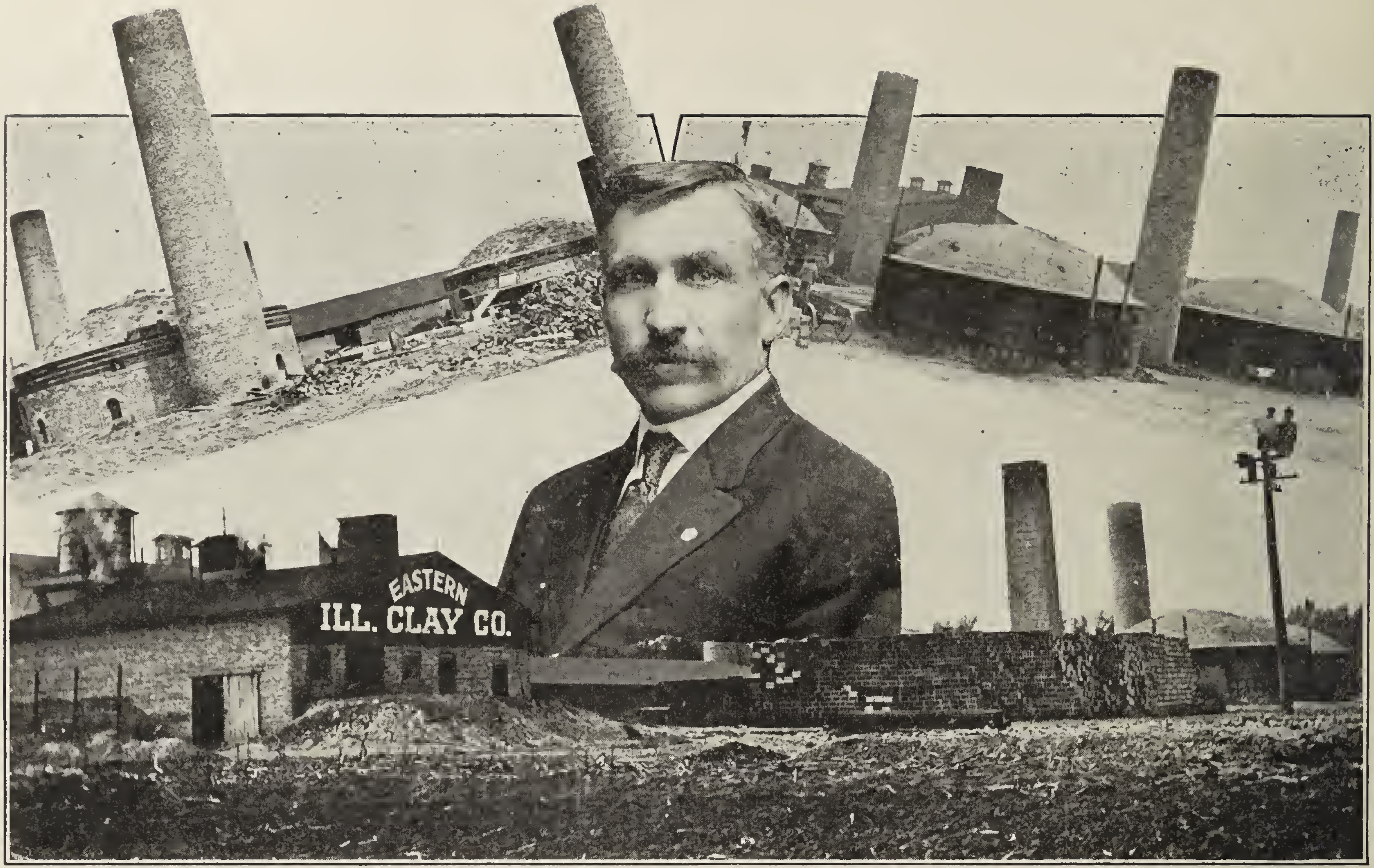
THE GREAT CORN BELT must supply MEN, MONEY and FOOD for the WORLD'S WAR

Farm crops, from which come the world's food, are plentiful when the grain-bearing plants are large and deep-rooted. This is when the SOIL IS OPEN, when its minute particles are coated with **FILM-WATER** and separated by **AIR**. Thus do plants find food. The deeper the open soil, the greater the plant food supply and the more bushels of grain to the acre, with the minimum amount of labor.

BIG CROPS are only made certain, on rolling or flat lands or during wet or dry seasons, when all farming land is thoroughly TILE DRAINED. This is the answer to the question—

HOW CAN AMERICA FEED A WORLD AT WAR?

MOREY CLAY PRODUCTS COMPANY, Ottumwa, Iowa



F. H. Meier and His Plant, the Product of His Industry

The FRUITS *of* PERSISTENT EFFORT

ALTHO THE ACCOMPLISHMENTS of F. H. Meier, president and general manager of the Eastern Illinois Clay Co., of St. Anne, Ill., are sufficiently numerous and notable to warrant the publication of a long article on his rise in the clayworking industry, this little item will attempt to hit only the high spots of a career that has, thru valiant and indefatigable effort, been richly rewarded.

Back in 1891 Mr. Meier conceived some mighty big aspirations in the clay products game. It was then that he assumed the role of "chief mudmixer" at a brick and tile plant at Byron, Mich. Nine years later, after suffering the loss of this plant thru fire, he moved to Harrietta, Mich., and continued in his chosen occupation at that point for two years, following which he operated a plant at Oldfield, Va., for a period of one year.

The Southern atmosphere and Mr. Meier didn't agree and after spending the aforesaid year on the Oldfield plant, he took a big jump to the little town of St. Anne, Ill., in the heart of miles and miles of rich farming country which was calling in a loud voice for drain tile and lots of it. When he landed at the quiet, pastoral burgh, he harnessed himself to a small plant which had a particularly bad reputation, since it had busted up other enterprising individuals who has previously attempted to operate it.

That was the source of but little worry for F. H. Meier, however; he had come to stay and make money while staying. Consequently, in the course of a few years the diminutive factory with a capacity of about 42,000 four-inch drain tile *per week,* burned in three somewhat delapidated kilns, experienced a vitriolic renaissance; it soon sprouted into a plant capable of turning out more than 20,000 tile a day, burned in eight substantial kilns.

Mr. Meier operated the factory of the St. Anne Brick & Tile Co. for twelve years, and in the summer of 1915 sold out his interests to U. A. Cote, who was at that time secretary.

In the spring of the same year, Mr. Meier had laid the plans for the organization of the Eastern Illinois Clay Co. and before the advent of summer the organization had been effected. Following a period of investigation the ground for the big plant of the new company was broken at St. Anne in the spring of 1916, with Mr. Meier in the position of president and general manager of the company and H. C. Walker, secretary and treasurer. For several years Mr. Walker conducted a retail business at Byron, Mich., but sold out his interests at that point to affiliate himself with Mr. Meier.

In April the first spade of dirt was turned and continued to fly so fast that in October 2, but six months later, the power from huge electric motors was turned on and a new chapter in Mr. Meier's career started.

Even this short account of the activities of F. H. Meier which have won for him his success in the burned clay industry would be incomplete without mention of the part played by his four sturdy, progressive sons who are following in their "dad's" footsteps, reaping immense profit from his long experience and avoiding the pitfalls into which he, in his pioneer mission, stumbled. All of them have played an important part in the past and continue to do so now.

Three now hold responsible positions in the operation of the St. Anne plant, which has a capacity of 35,000 drain tile per day, or 100 tons of 4x4x12 hollow tile, while the fourth, yet slightly young to assume a burden of responsibility, finds plenty around the plant to occupy his spare time, and to prepare him for the future.

HOLLOW TILE *on the* FARM
GETS VALUABLE PUBLICITY

Description, Bill of Materials, and Cost Figures Covering Round Barn, Given in "The Country Gentleman"

IT IS ENCOURAGING to see the merits of burned clay hollow tile as a building material on the farm receive such recognition as is given it in an article in "The Country Gentleman," probably America's largest and best known farm paper. We believe the article which appeared in that magazine to be of sufficient interest to manufacturers of hollow tile to warrant reprinting it here. Its greatest value lies in the fact that a detailed statement of cost is given, as well as a very concise and yet complete description of the building itself. The drawings which illustrate the article are those that were used in "The Country Gentleman."

This article, together with the one which appeared in the July 3 issue of *Brick and Clay Record,* giving floor plans, sectional views, and photographs of a model three-story hollow tile barn in Webster County, Iowa, should constitute effective ammunition with which to win over the American farmer to the gospel of better building, building for beauty and permanence, sanitation and economy, which can only be done with everlasting burned clay hollow tile.

The following is the story of "A Round Barn of Hollow Tile," taken from "The Country Gentleman":

A round dairy barn like the one in Blackhawk County, Iowa, which is shown herewith, measures sixty feet in diameter. It has room for twenty-nine cows, eighty tons of loose hay, 1,000 bushels of small grain, 125 tons of silage and a large water supply tank. The barn walls, which are of hollow clay tile, are eight inches thick and the silo walls above the first floor are four inches thick. The gambrel roof is well braced and is self-supporting. It is covered with four-inch strips for sheathing, and cedar shingles.

The foundation and the floors of the barn are of concrete, and the cow-stall floors are covered with wood blocks treated with a preservative. The girders which support the joists are built up from one-inch boards well spiked together, and are supported every six feet by three-inch wrought iron columns.

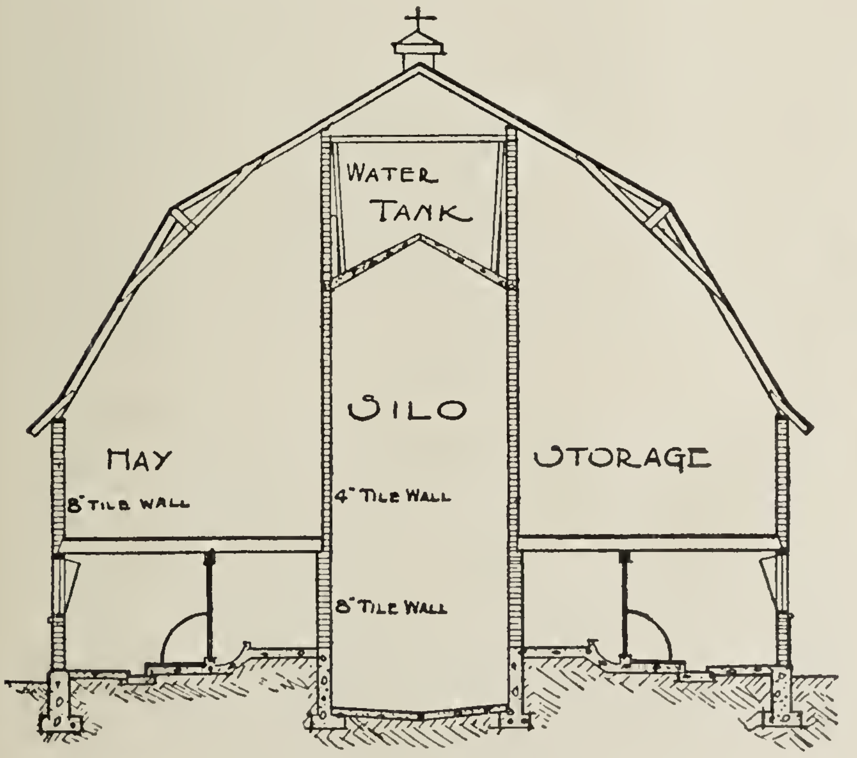
The barn is roomy and convenient. The feed alley is six feet wide; the concrete mangers, the cow stalls and the gutters are all standard and the litter alley is five and a half feet wide. A litter carrier track runs round the outside of the gutters and out to the manure pit.

Hay is hoisted to the mow from the driveway and grain is dumped into the bins in the mow by means of a portable elevator that is set up in the driveway. The silo-filling machinery is located in the same place when time comes for its use.

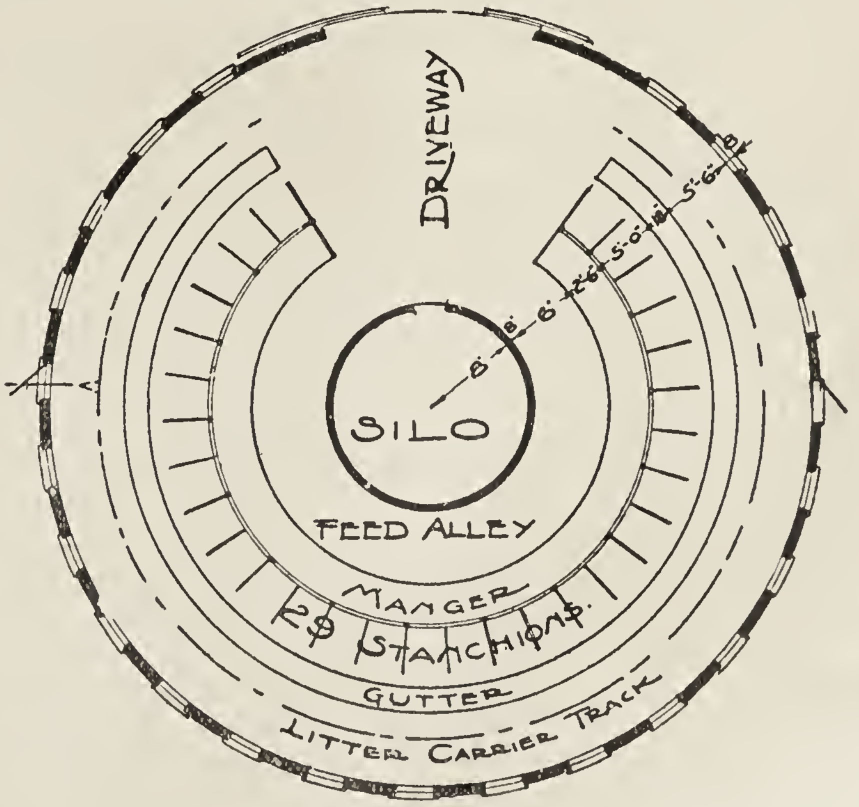
The barn is modern from every viewpoint. An abundance of sunshine sweeps the gutters daily. The large windows are four feet apart round the whole building. The barn is well ventilated by the hay and the silage chutes and the open space over the driveway, all of them connecting with the cupola in the center of the roof.

The material list which follows shows the amounts of cement, tile, and lumber that a sixty-foot barn like the one shown requires. It will cost about $2,800 to build such a structure in most sections of the middle western states:

186	barrels of cement for floor and walls
69	yards of clean, coarse, well-graded sand
114	yards of clean gravel or broken stone



Sectional View of Round Hollow Tile Barn in Blackhawk County, Iowa, Which, Together with Hollow Tile Enclosed Silo, Cost About $2,800 to Construct.



Plan View of the Same Barn, Showing the Arrangement of the Twenty-nine Cow Stanchions. Abundant Sunshine, Pouring Thru the Numerous Windows, Sweeps the Gutters Daily.

4,000	hollow-tile blocks 5" x 8" x 12" for barn walls
2,800	hollow-tile blocks 4" x 8" x 12" for silo and tank
2,450	feet of 2" x 6" x 20' rafters
900	feet of 2" x 6" x 14' rafters
175	feet of 2" x 6" x 10' rafters
400	feet of 2" x 6" x 4' lookouts
800	feet of 1" x 6" x 14' braces
150	feet of 2" x 6" x 16' headers
200	feet of 1" x 6" x 2' cleats
1,000	feet of 2" x 10" x 12' hay floor joists
1,200	feet of 2" x 10" x 10' hay floor joists
500	feet of 1" x 8" x 16' for built-up girders
3,000	feet of eight-inch ship lap for hay flooring
1,000	feet of four-inch sheathing lumber for roof boards
43	M cedar shingles
21	window frames 3' x 4'
3	door frames
21	windows for opening 3' x 4'
2	sliding doors 14' x 14'
2	hinged doors 3' x 7'
29	iron-pipe stalls and stanchions
16	iron posts 3" x 8'
160	feet of litter carrier track
110	feet of hay carrier track
28	feet of slidingdoor track and hangers.
1	litter carrier
1	hay carrier

The round barn is stronger than the rectangular barn, and does not require such heavy timbers in its frame. Wind pressure is a small factor to consider. The location of the silo in the center of the barn, which, with the feeding alley and the mangers round it, means easy feeding. In round barns mangers round it, means easy feeding. In round barns higher silos can be built if the silo is to be built out in the open, and freezing of silage is less.

Barns of the circular type are most successfully built of masonry materials, such as hollow tile. The round barn of frame is not generally considered so desirable.

It will be noted in this article that the floor of the cow stalls are covered with wood block treated with a preservative. In this connection the information regarding the construction of farm building floors contained in the following item, taken from "Better Iowa," the official bulletin of the Iowa State College, is of great interest. Altho the use of hollow tile with a covering of cement in the construction of floors is referred to in this item as being especially applicable to poultry and hog houses, the adoption of this type of floor in barns thruout Iowa is becoming very general, since it provides a surface that is dry and sanitary.

Ordinary hollow tile building blocks, 4 x 8 x 12 inches, or 8 x 8 x 12 inches, provide excellent material for the construction of floors in poultry and hog houses, says the agricultural engineering department at Iowa State College in answer to many inquiries from farmers over the state, according to "Better Iowa."

The air space afforded by the blocks prevents conduction of heat to the ground. It also prevents the rise of moisture which frequently happens in the case of concrete floors. In general such floors are both dryer and warmer than the floors of solid concrete. In constructing such a floor, the dirt beneath is thoroly compacted to a smooth surface and blocks are thne laid in place as tightly as possible.

Another One of the Hawkeye State's Many Hollow Tile Round Barns.

Some farmers have found floors constructed in this way satisfactory without any additional work. Generally, however, it is best to cover the blocks with about two inches of concrete. When not covered they afford a harbor for rates and mice and it is hard to lay them tight enough so that they will not fill with dirt.

Where concrete is not used a good foundation which is well drained should be provided.

* * *

Building Good in Montana

"Building activities thruout the entire state are generally very good," according to C. H. Bray, secretary and general manager of the Western Clay Manufacturing Co., of Helena, Mont., "and the outlook for business is the best we have had in years." Mr. Bray's company is now filling orders for a new school building at Townsend, Mont., two school buildings at Butte, as well as a large apartment building, hospital, and hospital addition in the same city, and in Helena practically all of the contracts call for local brick.

The company was established many years ago by the Kessler interests, and in 1905 was incorporated with F. E. Kessler, president; J. A. Switzer, vice-president, and C. H. Bray, secretary and general manager. The output of the company, besides common brick, includes tile, fire brick, white and red pressed ornamental brick, vitrified paving brick, hollow building tile, fireproof flue lining, and vitrified culvert and sewer pipe.

The plant is located on a forty-acre site, and a spur of the Northern Pacific tracks is built into the yards. The clay is obtained from two hundred forty-acre tract owned by the company at Blossburg, about twenty miles from the plant. Once a day twenty cars are loaded at the pit by steam shovels and carry their burden to the storage sheds at the Helena factory. The plant has a capacity of 75,000 brick per day. Eight down-draft kilns and four up-draft kilns, the latter having a capacity of 400,000 brick each, are used in burning the company's products.

* * *

Refractories Association Moves Headquarters

The Refractories Manufacturers' Association has moved its general offices from Chicago to Pittsburgh, where it has taken a commodious suite in the Oliver Building, with Frederic W. Donahoe, secretary, in charge. The "Smoky City" seems to be the logical headquarters for the fire brick manufacturers, since Pennsylvania, according to the report of the United States Geological Survey covering clay products manufactured in 1916, is credited with fifty per cent. of the brick output of America.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Theory of Roll Crushers

When roll crushers are installed in a clay plant the manufacturer usually has the rolls made of a proper size and set at a proper distance so that they will work as efficiently as possible. However, it sometimes happens that the roll crusher must be repaired or the material fed into the rolls becomes of a different nature than was first used which would make it desirable to know something about the theory of roll crushers.

The object is to have the rolls of such a diameter and set at such a distance apart so that they will pull the lumps down thru the rolls and yet not utilize excess power. If the rolls are too far apart they will not crush the material properly. On the other hand, if they are too close together they may crush the material more than is necessary, thus wasting power, or it may happen that the material will not be drawn thru the rolls, but will simply slide between them and tend to stuff up the crusher.

If the rolls C and D (see Fig. 1) of a roll crusher be fed with a sphere of rock E, the tangents to the rolls at tt, the points of contact with the sphere meet below, forming an angle N, which angle is called the angle of nip. This angle may have values from zero degrees, where the space between the rolls is as large as the lump fed, increasing upward until the angle is so large that the rolls cannot nip the fragments.

The angle of nip in any case will depend for its value upon the diameter of the rolls, the diameter of the lump fed and the distance apart at which the rolls are set. It is also affected in the following ways: It is diminished by increasing the diameter of the rolls (the space between the rolls being kept constant); by increasing the space between rolls, and by decreasing the size of lumps fed to the rolls.

All relations between size of material, space between rolls, radius of rolls, and angle of nip can be expressed by a simple formula, which is derived as follows: If b equals the radius of the sphere to be crushed, a equals one-half of the space between the rolls, N equals the angle of nip, and r equals the radius of the roll which is equal to one-half of the diameter, then

$$\frac{r + a}{r + b} = \text{cosine } \frac{N}{2}.$$

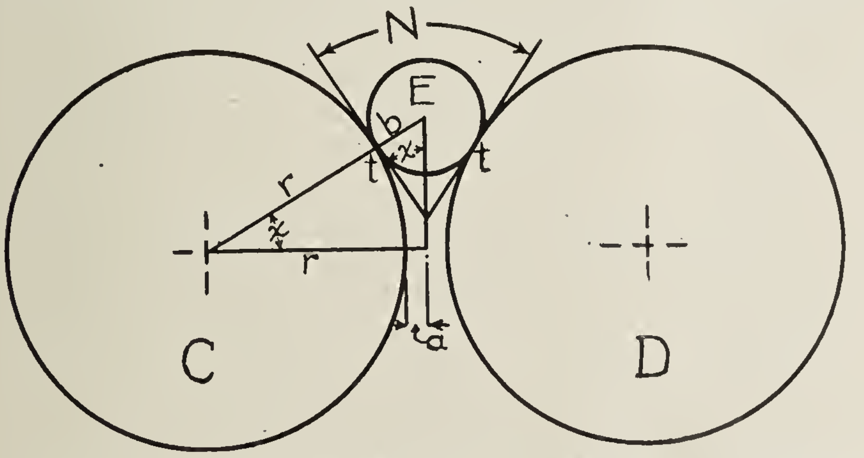


Figure 1. C and D Represent Iron or Steel Rolls and E Represents the Rock to be Crushed. The Angle N is Called the Angle of Nip.

To effect a reduction, the friction F (see Fig. 2) between the sphere and rolls must equal Ku, where K is the force of the reaction and u is the co-efficient of friction. In terms of a force system as represented in the diagram, the component F cos x tends to draw the clay between the rolls, while K sin x tends to push the sphere out, and hence acts in opposite direction to the force F cos x.

To freshen out minds a little with the terms of trigonometry we remember that in a right triangle the cosine (cos) of an angle is the ratio of the side adjacent to the angle to the hypotenuse. The tangent (tan) of an angle is the ratio of the side opposite the angle to the side adjacent to the angle, or it is equal to the ratio of the sine of the angle to the cosine of the angle, where the sine is equal to the side opposite the angle to the hypotenuse.

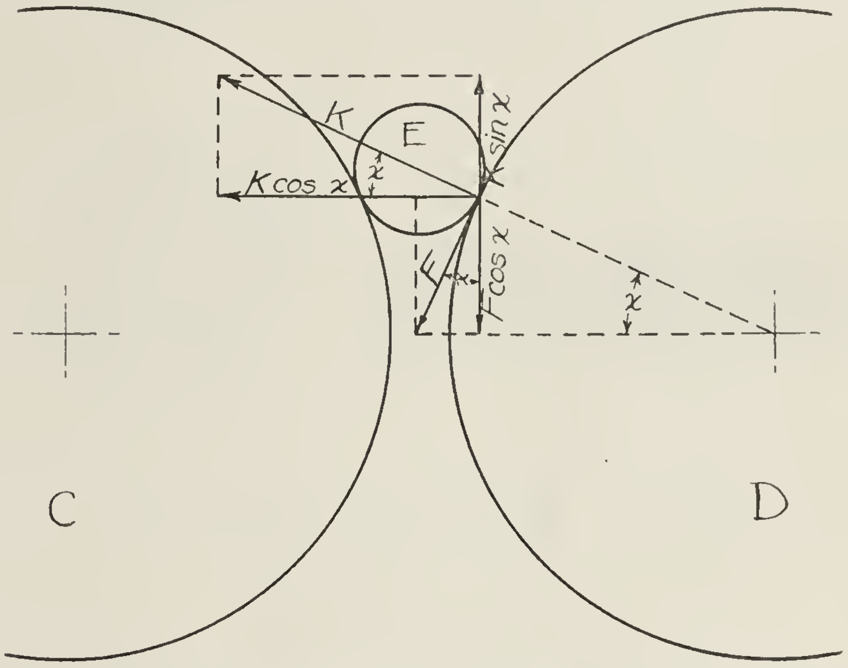


Figure 2. The Forces Acting Upon the Sphere of Rock to be Crushed and Their Components Are Shown By the Lines With Arrowheads.

If the above forces were equal the following equation would hold true: F cos x = K sin x or F = K tan x. From this we conclude that for the rock to pass thru the rolls u must be greater than tan x and, hence; the angle x must be less than the angle of friction.

⁂

Limestone and "Poping"

Lime minerals are very common in clays and often very troublesome. The effect of limestone pebbles is very well known. The stone burns to a caustic lime at about 1,600 degrees Fahr. and when exposed to atmospheric agencies, hydrates, swells, and pops off flakes from the surface of the ware.

Clays which "pop" after burning in up or down draft kilns, often will not "pop" when burned in a continuance kiln, especially if the kiln has no advanced heating flue. The sulphur gases of the continuous kiln converts the lime into calcium sulphate which does not hydrate.

Lime in an extremely fine condition, or as a constituent

Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited

CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo, Michigan, U. S. A.

This Is the Way Your Bearings Look

To secure it you simply place a graphite sheet between the mandrel and the bearing box and pour in the babbitt. The result is a babbitt bearing impregnated with graphite spots. These bearings last from two to ten times as long on severe work.

Randall Graphite Sheet Lubricator Co., 816 W. Lake St., Chicago, Ill.

UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket

"The Chain of Double Life"

Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used Sprockets, Buckets, Elevators, etc.—Send for Catalog

THE UNION CHAIN & MFG. CO., SEVILLE, OHIO

DO YOU NEED MONEY?
We Specialize in Bonds on Clay Properties.
We Arrange for Their Issuance and Sale.
We have rendered aid to many clay product manufacturers desiring to expand and improve their properties.
Write Us—Perhaps We Can Help You
F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILL.

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation
TRACK CABLE
LOAD CABLE
DUMP TROLLEY
BUCKET DIGGING
BUCKET DUMPING
ANCHOR
DOUBLE DRUM ENGINE & BOILER MOUNTED ON MOVABLE TOWER
SPOIL PILE
SAUERMAN BROS.
316 S. Dearborn St, - Chicago, Ill.

"SCANDINAVIA"
(Solid Woven Cotton Belt)
TRULY THE BRICKMAN'S BEST BELT
Scandinavia Belting Co.
106-108 Reade Street, New York
Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh San Francisco, Los Angeles, Portland, Ore.
Canada: Federal Engineering Co., Limited, Toronto and Montreal.

> TO STOP advertising to save money is like stopping a clock to save time.
>
> *—The Little News.*

of a mineral which dissociates at kiln temperatures, is extremely troublesome in the burning. It does not act as a flux at low temperatures nor until dissociation takes place and then it seems to act suddenly and completely. A clay bed must not always be condemned because of the presence of lime pebbles, however. Some limestones, likely because they are earthy or dolomitic, do not cause poping.

Shale beds near Buffalo, N. Y., and Toronto, Ont., have interstratified streaks of limestone six to twelve inches thick, yet the ware made from this shale does not "pop." The ware may be soft up to a point when the lime begins to act as a flux, then hardens and begins to fuse all within a range of one or two cones.

Generally three cones are considered the minimum kiln range in practical work without excessive fuel consumption, but many limey clays will harden and fuse within two cones, even within one cone range and consequently, are impractical in commercial kilns.

In a recent study of the matter by Dr. E. Selch, it was found that in stoneware bodies containing lime compounds almost the whole of the lime in the burned ware was in such a form that it could be extracted by treating the finely powdered biscuit ware (burned to Seger cone 9 (1,310° C. or 2,390° Fahr.) or to a lower temperature) first with warm hydrochloric acid of specific gravity 1.12 and afterwards with 10 per cent. solution of caustic soda at a temperature of 99 degrees C. for a quarter of an hour. The two extracts were mixed together, and the composition of the mixture determined by analysis.

An unexpected result of the investigation was the apparently small difference between the ware burned to cone 9 (1310° C. or 2390° Fahr.) and that burned to cone 04 (1070° C. or 1958° Fahr.). It is commonly supposed that ware burned at a high temperature will yield less material to acid and alkali, but in Selch's experiments precisely the opposite was experienced with ware containing lime, tho he confirmed the common experience with lime-free bodies.

The presence of free quartz grains does not appear to affect the quantity of matter extracted, as quartz is not readily affected by the alkali, the action of the latter being confined almost exclusively to the clay present and to any adventitious "soluble silica." It is true that when a mixture of calcium carbonate and finely powered quartz are heated to redness some amount of combination occurs between the two, but Selch's experiments seem to indicate that when clay is present a selective action occurs, and the quartz is not attached by the lime until all the clay has been decomposed by it. Feldspar is equally without action on the amount of material rendered soluble by lime, so long as the temperature in the kiln is not sufficiently high for the feldspar and lime to react on each other, i. e., below cone 10 (1330° C. or 2426° Fahr.).

The formation of a readily decomposable compound of lime and clay explains the greater ease with which glazes adhere to limy bodies, and also the readiness with which paving brick rich in lime are readily affected by acids, whilst vessels made of ware rich in lime are seldom able to resist chemical action. It may also account for the small difference in temperature between the vitrification point and that at which the ware loses its shape.

* * *

Some Valuable Wire Rope Data

Wire ropes are usually made of six wire strands laid around a hemp core or center. For special purposes a wire strand is sometimes substituted for the hemp center; this adds from seven to ten per cent. to the strength of the rope. Each wire strand is composed of nineteen or seven wires twisted together. Any other number of wires do not make a campact strand and hence it is only advisable to use strands of seven or nineteen wires. In using either nineteen or seven wires in each strand, six strands plus the hemp strand will give one hundred and fourteen or forty-two wires for the total number in the rope. The rope's strength is therefore equal to the aggregate strength of the total number of wires less about ten per cent. This loss is due to the twisting of the wires in the rope.

The opinion of superintendents vary much as to what kind of rope is best. Special conditions govern almost every case. For general rules regarding different kinds of wire ropes it may be said: First, that ropes with nineteen wires to the strand being more pliable are preferable in vertical hoisting and in cases where the ropes are wrapped around sharp curves, provided they do not drag along the ground and friction is avoided as much as possible.

Second, ropes with seven wires to the strand are stiffer and require larger drums or sheaves than those of nineteen wire strands but the thicker wire can stand considerable more wear and these ropes are therefore preferable on straight or nearly straight courses.

Third, ropes with a long twist stretch little and glide easily over rollers. They are therefore well adapted for the tail rope system and wire rope tramways.

Fourth, a short twisted rope is very elastic and consequently stretches considerably. On account of this quality such ropes are to be recommended for inclined planes where the rope is subject to sudden dangerous shocks which would prove fatal to a long rope. It is also easier to make a more durable splice in short twisted than in long twisted ropes In the endless rope system where a good splice is necessary a great stretch is inconvenient. Therefore, a rope of medium stretch is preferable, or in other words a rope of medium twist is desirable.

Fifth, in going around curves it is always better to run the wire rope over one large single sheave, if possible. Otherwise, a number of small rollers should be used.

Sixth, in most cases a steel rope is to be recommended over an iron rope. It is cheaper than an iron rope of equal strength, also much lighter, less bulky, more elastic, harder, and more durable. On the other hand, its elasticity sometimes causes the rope when wound around a small drum to jump after the spring is released. Its hardness, a good quality of the rope, is injurious to rollers and sheaves and wears them out more rapidly than the iron rope does.

DURABILITY DEPENDENT UPON DRUM DIAMETER

The durability of a rope depends upon the diameter of the drum or sheave about which it is wound. The smaller the drum the greater the strain. Therefore, in determining the size of the drum or sheave, the consideration that the strain produced by bending, combined with the direct pull of the working load, should not exceed a certain maximum, is a guide. For this maximum we take the limit of elasticity of the material. That is the limit to which it can be strained a great many times without injury.

Following is a table showing the smallest diameter in feet of a drum or sheave to be used for ropes of diameters and construction stated:

Diameter of rope in inches	Steel Ropes 19 wires to the strand	Steel Ropes 7 wires to the strand	Iron Ropes 19 wires to the strand	Iron Ropes 7 wires to the strand
2¼	8.6	....	8	....
1½	5 7	8.6	7.8	13
1	4.0	5.7	5.4	8.6
½	1.5	2.6	2.3	4.0

CRESCENT
BELT FASTENERS

Tired of having your belts break? Write us for the Belt Man's Chart No. 4 and learn how to join belts so they stay joined.

CRESCENT BELT FASTENER CO.
381 Fourth Avenue New York

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.

Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

B. & B. Aerial Tramway Systems

Handle any kind of loose material expeditiously, economically and with absolute safety.

Where the grade is sufficient, gravity supplies all the power, and one or two men can operate an entire tramway.

Ask for Catalog 16 giving detailed information.

Broderick & Bascom Rope Co.
St. Louis, Mo.
New York Seattle

Hill Friction Clutches
Collar Oiling Bearings

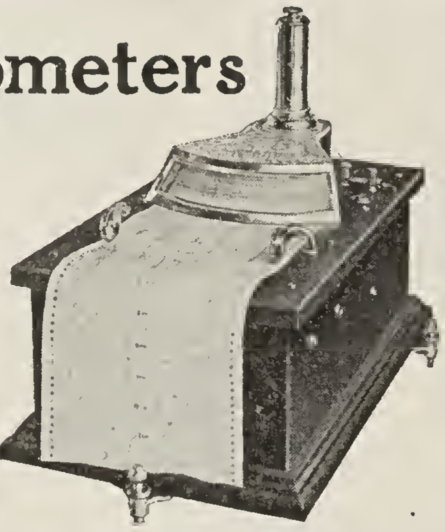
Hill Friction Clutch Pulley
Smith Type
(Patented)

and

Complete Power Transmission Machinery Equipments

Catalogs upon Request

The Hill Clutch Co.
Cleveland, Ohio
New York Office. 50 Church Street


"Price Pyrometers

show us how to burn each kiln to get the perfect burn at lowest cost—they have paid for themselves many times over."

That's what the superintendent of one large clay-products plant said.

Write us for full information.

The Price Electric Co.
12367 Euclid Ave.
CLEVELAND, OHIO

The "Rust Special" Clay Feeder

Is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

They Drill Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

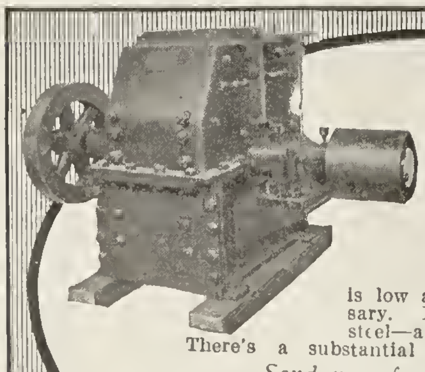
They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. **It paid for itself in the first three months;** it saves enough powder each year to more than pay for its initial cost."

This is interesting because it is a fact.

Send for Bulletin No. 4.

The Sanderson Cyclone Drill Co.
Orrville, Ohio


An investment that stands

The initial cost of a

K-B Pulverizer

is low and covers about all the outlay necessary. It is built throughout of high grade steel—and is practically indestructible. There's a substantial saving in power costs as well.

Send now for catalog with interesting facts and figures.

K-B Pulverizer Company, Inc.
86 Worth St., New York

An iron wire, altho it possesses the same value for modulus of elasticity as steel, has only an ultimate strength and a limit of elasticity of less than one-half that of steel wire. The working load for wire ropes is generally taken as one-fifth that of the ultimate strength.

The approximate breaking strength (ultimate strength) of steel wire ropes are:

Six strands of nineteen wires each

Dia. of rope in inches	Wt. per ft. lbs.	Approximate breaking stress, lbs.		
		Cast steel	Extra steel	Plow steel
2	6.30	248,000	288,000	330,000
1½	3 55	144,000	168.000	192 000
1	1.58	68,000	78,000	88,000
¾	.89	38,800	44,000	50.000
⅝	.62	27,200	31.600	36.000
½	.39	17,600	20,200	22,800

Six strands of seven wires each

Dia. of rope in inches	Wt. per ft. lbs.	Approximate breaking stress, lbs.		
		Cast steel	Extra steel	Plow steel
1½	3.55	136,000	158,000	182,000
1	1.58	64,000	74,000	84,000
¾	.80	37,200	42,000	48,000
½	.39	16,800	19,400	22,000
$\frac{7}{16}$	.30	13,200	15,000	17,100
⅜	.22	9,600	11,160	12,700

There are practical reasons for choosing in certain cases larger drums than stated in the first table. For instance, a larger drum may be used so as to eliminate any recoil when the tension is released.

If the working load produces in the straight part of the rope less strain than one-fifth of its ultimate strength, the drum may be smaller without endangering the rope, but if the working load is greater than one-fifth of its breaking strength the drums must be correspondingly larger so that the strain shall not exceed the limits of elasticity. Sometimes it is impossible on account of lack of space to use a large sheave. In that case a number of small rollers must be used.

* * *

Don't Fail to Read It.

For items of great value to the superintendent, don't fail to note the following tips which appear in the feature article, "Spending a Week at Illinois' Largest Paving Brick Plant."

1. Method of loading clay cars at steam shovel.
2. Method of dumping cars into chute at top of incline.
3. Working in unison when hacking brick upon dryer cars.
4. Distance of dryer car tracks from off-bearing belt.
5. Platform at far end of off-bearing belt to facilitate hacking.
6. Dryer stack construction and pyrometer location.
7. Unusual material used in dryer roof construction.
8. Supplanting I beams with double rails in kiln bracing.
9. Size, number and position of fireboxes on kilns.
10. Reconstruction work in accordance with a well-laid-out plan for one large plant of uniform construction.

* * *

Robert C. Mitchell, general manager of the Homesuite Home Co., of Cleveland, Ohio, which will erect tile and stucco houses on a large scale for workingmen, was a recent visitor in Chicago. He was seen on the street with Wm. Gifford, manager of the brick department, Wisconsin Line and Cement Co., who is the other half of the "brick twins." Mr. Mitchell returned to Cleveland Tuesday, September 4. He was formerly sales manager of the Barkwill Farr Co.

The LETTER BOX

A Place Wherein Letters
That Have General Interest
Are Published and
Commented Upon

Stiff-Mud and Dry Press vs. Soft-Mud, Again

Some folks are certainly persistent. Here comes an old friend of *Brick and Clay Record*, a critical contributor and controversial gentleman, absolutely denying the receipt of any mental illumination obtained from the prize-winning paper in the Second Ceramic Students Essay Contest, entitled, "Some New Light On An Old Problem," contributed by B. T. Sweely. This paper was published in two parts, part one appearing in the August 14, and part two in the August 28, issue.

This gentleman, who asks that his name be withheld, writes under date of August 22, as follows:

> If I had not put myself on record in your magazine by stating that the stiff-mud and dry-press method of brickmaking produced a denser and superior brick than the soft-mud method, providing the dry-press brick were properly made and properly burned, I would leave a radical theory to its blissful slumbers. Professor A. V. Bleininger has done much for the clayworking industry, and while the theory might be correct that a brick made by the soft-mud process would, under certain one-sided conditions, produce a superior brick to either the stiff-mud or the dry-press systems, the conclusions drawn are of no practical importance. The foregoing applies to the feature articles on pages 296 and 299. Now, when we say "things being equal," when we burn brick made by the different processes in the same kiln with the same heat in the same time, DO THE DRY-PRESS brick get a square deal? Or the stiff-mud? The dry-press requires different treatment and more heat which it did not receive in the test. It actually received only 1,700 degrees Fahr. After being made "rotten" and probably discolored by too rapid preburning and then only half burned, would you expect anything other than an absorbent brick. Things being equal in burning could not be taken otherwise than that the brick should be heated according to the amount of clay contained in it, and its ability to take the heat, for instance, the stiff-mud requires more time in pre-burning and more heat than the soft-mud, and the dry-press still more, yet, as I understand the article, all brick were burned in the same kiln, and in the same time, with the same heat, approximately 1,700 degrees Fahr.
>
> This article will be and has been read by practical paving brick men employing the stiff-mud process, and fire brick men making dry-press brick. It is also read by ceramic engineers. *And while it makes the unskilled laugh, cannot but make the judicious grieve.*
>
> How many brickmakers know, as I do, that burning brick in a continuous kiln can be done with more system and the amount of fuel used can be cut down to nearer the required minimum than in any other kilns. I know, from my own practical experience that in changing from the soft-mud system to the stiff-mud system that a superior brick is produced, also that the burning time is lengthened and the amount of fuel is increased to the proportional amount of clay in the brick. I also know that a dry-press sample in this kiln would burn rotten. Therefore let us say:
>
> "THE BURN'S THE THING WHEREIN WE'LL GIVE THE BRICK THE RING."

If the results obtained in Mr. Sweeley's experiments do not "jibe" with practical results on a brick plant then let the difference be "aired" in the columns of this paper. The contention is that soft-mud brick when burned to the right temperature produces a better product than the dry-press and soft-mud processes. If there is any one who by practical

ORIGINAL Boss SYSTEM COMMON SENSE APPLIED TO ORIGINAL Boss SYSTEM
Drying and Burning
Boss Ten-Hour Dryer
Would you like to really dry your brick and do it in half less time?
Boss System of Burning Brick
Would you like to improve the quality of your brick and reduce your cost of burning?
Then write for information and we'll SHOW YOU HOW!
JOHN C. BOSS COMPANY
Monger Building - Elkhart, Indiana

"CRIMORA"
That's the MANGANESE you should always use—then you can sell your trade a real specialized brand of brick in
BLACK, SPECKLED OR GREY TONES
Also—you can always depend on CRIMORA MANGANESE DIOXIDE to produce the exact grey-black facings you desire. We can furnish it in any grade or size desired.
Crimora Manganese Corporation
30 East 42d Street New York

SIL-O-CEL PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE
INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.
Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.
CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway CHICAGO Monadnock Bldg PITTSBURGH Oliver Bldg LOS ANGELES Van Nuys Bldg SAN FRANCISCO Monadnock Bldg
Write nearest Office for Samples and Information

Base Metal Couples and Low Resistance Instruments are absolutely unfitted for use on Clay plants.
We do not and we will not sell that class of equipment for measuring temperatures exceeding red heat
STUPAKOFF PYROMETERS
for high ranges of temperature are equipped only with rare metal couples and high resistance galvanometers. They are dependable and we guarantee satisfaction.
The Stupakoff Laboratories
Pittsburgh, Pa.

HETTRICK
RED STITCHED CANVAS
BELTING

You Cannot Afford to Take Chances on Your Belting

Hettrick belts are strong and are built primarily for service.

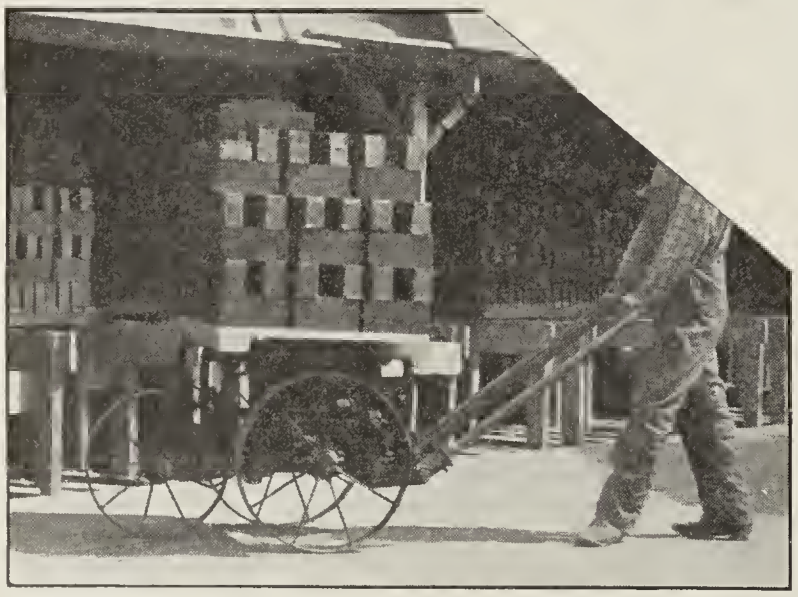
Strength of the primary fabric receives rigid inspection.

These are the reasons that our belts are giving such splendid long life service in clay plants.

Write us today for facts and prices.

Hettrick Mfg. Co.
Toledo, Ohio

Cut Your Labor in Half



With the Drymore System your labor expense is cut in half because

ONE MAN TRUCKS YOUR OUTPUT

from the cutter to the drying shed. The brick are better in quality and appearance because

YOUR BRICK ARE NOT REHANDLED

individually after being placed upon the pallet at the cutter.

NO RAILS; NO TRANSFER CARS; NO TURNTABLES

There are four Drymore Systems—all worth investigation

Drymore—
FOR LESS

DRYMORE SYSTEM Galion, Ohio

experience has found that when properly molded and burned, the soft-mud product will not give a superior piece of ware, we will be glad to hear from such a party.

⁂

Says Director Manning is All Wrong

Under the heading "Mines Official Expresses Himself Concerning the Clayworking Industry," an article appeared in the August 28 issue of *Brick and Clay Record* on page 400, in which a statement from Director Van H. Manning of the U. S. Bureau of Mines was quoted, to the effect that the clayworking industry was a back number, that it needed to wake up and "get next" to itself. Particular emphasis was laid upon the so-called "fuel waste," the director believing that this feature needed the undivided attention of ceramists the country over.

Our good friend Professor Homer F. Staley, of the Iowa State College, Ames, has written us under date of September 6, as follows:

> Allow me to make some remarks concerning letter of Mr. Manning, Director of the Bureau of Mines, published in your last issue, which refers to the establishment of a ceramic experiment station at Columbus, Ohio. The keynote of this letter seemed to be the deplorably low technical status, and lack of progress of the clayworking industries, and it is to this view that I wish to object vigorously.
>
> It has become the fashion on the part of chemists and others, knowing practically nothing about our industry, to lament over the low state of the art, with particular reference to the American industries. Apparently they do not seem to realize that America leads the world in many branches, both with reference to quality and magnitude of production. American terra cotta is unexcelled, American face brick, paving block, hollow building blocks, wall tiles, conduit tile, roofing tiles, electrical insulators, floor tile, sewer pipe, stoneware and refractories are at least equal and frequently superior to those common to other countries. We are deficient in comparison with European fine pottery; but this is not a matter of chemistry but of art and handicraft and is a condition now being remedied as rapidly as is consistent with sound growth. The mechanical equipment of our structural clay products plants for the preparation of clays is decidedly superior to that of the average European factory.
>
> The technical improvement in the treatment of clays to which such chemists constantly refer in indefinite and vague terms is purely an illusion. To treat chemically raw materials having an intrinsic value of twenty-five cents per ton or less is absurd. It may be done with kaolins, but certainly not with the cruder raw materials. Nature in each case has furnished certain clays or shales and they must be used as they are laid down, and no amount of physical chemistry can alter this condition.
>
> With reference to the fuel problem, it is realized by every clayworker that this is the most urgent question confronting him. As long as cheap fuel was available—as it has been in the past—it would have been foolish from a business standpoint to refrain from using cheaper kiln equipment insuring high quality of ware. This is especially true in the case of the manufacture of structural materials made from clay, which is an industry particularly sensitive to financial depressions and in which the tying up of capital in idle equipment is often a serious matter. But to say that nothing has been done to meet the conditions brought about by the increase in fuel cost is manifestly unjust. It is now nearly seventy years since the continuous kiln principle was evolved, a brilliant achievement, representing fuel economy not even approached in any metallurgical or chemical furnace and which closely approximates theoretical possibilities. Hundreds of such kilns have been built all over the world and a rapidly increasing number of them in this country. The same principle, applied to the tunnel car kiln, is constantly gaining in appreciation.
>
> What the clay industry needs principally is a better knowledge of the properties of its products, which would make possible an extension of its markets; a better appreciation of efficient business methods; better selling methods; overcoming of excessive competition, or in general, an improvement in the economic conditions.

The writer does not mean to imply that research and investigation are not essential and important for further progress. Far from it, but such work should be done in thoro appreciation of the real needs of the industry. A vast amount of such work has already been done by the different colleges having ceramic courses of instruction, by the American Ceramic Society, the Bureau of Standards, and the Geophysical Laboratory; and it has been done in a quiet, efficient way, each contribution standing on its own merits.

If the Bureau of Mines, or any other agency, wishes to help the ceramic industries, the first essential is that it have a clear conception of what these industries have already accomplished.

We are deeply indebted to Professor Staley for the points to which he calls our attention and are glad to say that his letter receives our hearty approbation.

* * *

IN the WAKE of the NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

---

Personal

E. M. Durant, president of the Pacific Sewer Pipe Co., of Los Angeles, Cal., has been visiting in San Francisco this week.

Henry Clemens, manager of the large sewer pipe factory of the Cannelton (Ind.) Sewer Pipe Co. and former mayor of that city, made a business trip to Chrisney, Ind., recently.

George H. Tingley, manager of the Salt Lake (Utah) Pressed Brick Co., visited in Logan, Utah, recently to confer with a local contractor concerning shipments of brick for the new high school building.

E. L. Watts, secretary of the Hebron (N. D.) Fire & Pressed Brick Co. for a number of years, has tendered his resignation to take effect on Sept. 1. It is stated that he will engage in some other line of business.

William B. Wreford, formerly secretary of the Detroit Brick Manufacturers and Dealers' Association, is now in charge of the Ferry Field Theatre, Grand River and the Boulevard, Detroit, of which enterprise he is treasurer.

Paul Beer, who was for many years manager of the Des Moines plant of the Barber Asphalt Paving Co., but who resigned when that company sold its plant to the Capital Clay Co., has become manager of the Flynn Dairy Co., at Des Moines.

Frank A. Bagley, a prominent brickmaker, of Zanesville, Ohio, has been named as superintendent of the Lake Shore Shale Brick Co., of Ashtabula, Ohio. Mr. Bagley has made clays and shales a life study and pronounces the shale beds of the Ashtabula plant to be of unusual quality.

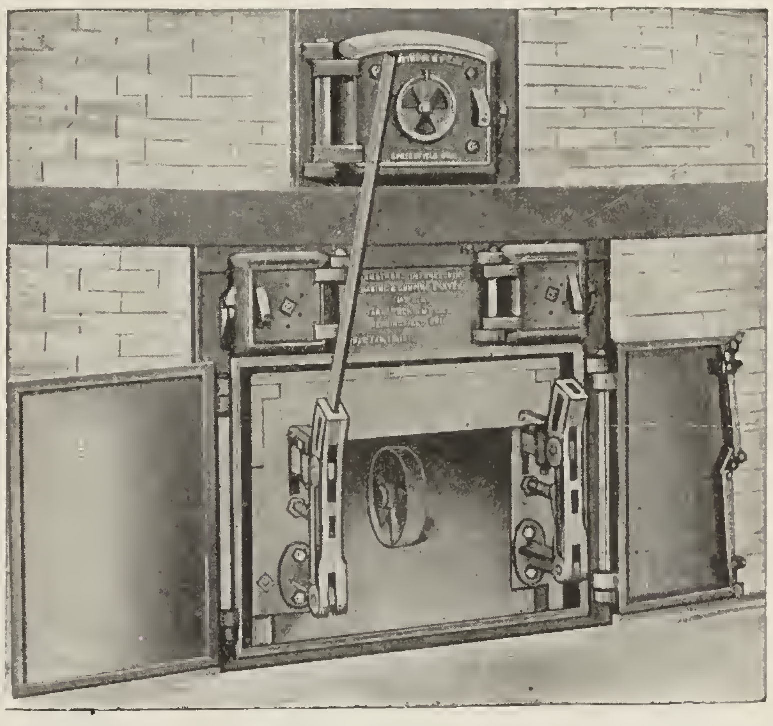
E. R. Sturtevant and family have moved their residence from Abingdon, Ill., to Glencoe, Ill., a suburb of Chicago. Mr. Sturtevant sold his interests in the Abingdon (Ill.) Clay Co. several months ago, after he had been made secretary-treasurer of the Hollow Building Tile Association.

Tycos
FERY RADIATION
PYROMETERS
Eliminate Guesswork from the Manufacture of All Products requiring extremely high Temperatures ★ ★ ★ ★

We Manufacture - Thermometers and Instruments covering every Temperature requirement in Metallurgy and Chemistry

A Catalog Cheerfully Sent Upon Application

The Taylor-Cambridge Division
Taylor Instrument Companies
Rochester, N.Y.


Just one movement of the dumping device of the
Standard Interlocking Kiln Grate
entirely cleans the fire—clinkers as thick as six inches are easily handled.

This is only one of many points of superiority that make this the ideal kiln grate for every brick plant.

We install it at our expense—you give it a thoro trial—if it doesn't do all we claim we'll remove it without any cost to you.

Write for details and prices.

The Armstrong Manufacturing Co.
SPRINGFIELD, OHIO

Brickyard Bill Says: "You kin gin'rally tell the feller who ain't perticl'ler 'bout drying—by the money thet he don't make."

The Standard Drier

is a money-maker for live brick-manufacturers because it cuts drying costs, increases output and improves the quality of the product.

Ask any Standard Drier user how he will trade drying systems with you—see what he says.

List of users and catalog sent for the asking. Estimates furnished without obligation. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

Gold Medal Award

PANAMA-PACIFIC INTERNATIONAL EXPOSITION SAN FRANCISCO
MEDAL OF AWARD
MCMXV

Panama-Pacific Exposition
for
THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Their Merits are Vouched for by Hundreds of Satisfied Users
Ask for our New General Catalog No.8

THWING INSTRUMENT CO.
3336 Lancaster Ave. - Philadelphia, Pa.

H. C. Kleymeyer, general manager of the Standard Brick Manufacturing Co., of Evansville, Ind., has been appointed by the Evansville Real Estate Board one of a committee to help the Evansville Chamber of Commerce bring a steamer hammer and tractor factory to that city that will employ a large number of men.

At the annual meeting of the York Harbor (Me.) Brick Co., the president, J. C. Webster, declined re-election as a director of the company and J. F. Sanford was made president and treasurer in his stead. William Bone was elected clerk. President Webster recently has spent much of his time at his southern home in North Carolina and felt that, for that reason, he could not give matters connected with the business of the company the attention they should have.

C. E. Vreedenberg, who for the past fifteen years has been superintendent of the Cambridge (Mass.) plant of the New England Brick Co., has resigned and is undecided at present what his future work will be. During all the time that Mr. Vreedenberg was employed by the company he had taken no time off. Just at present, however, he is making up for this and, with Mrs. Vreedenberg, is touring the Adirondacks. Miles Vreedenberg, who for the past two years has worked with his father, also has left the company and he has taken a position in West Virginia.

California

Church Brothers, of Golden, Col., manufacturers of the Golden pressed brick, were in Moffat County, Col., recently prospecting for material from which could be made a clay product worthy of bearing their trade mark.

The Union Brick & Tile Co. opened its plant in Modesto, Cal., last week, placing 150,000 brick in the kilns. It is understood the first week's output had been contracted for in advance, and there is every indication that the plant will continue to operate steadily.

The Livermore (Cal.) Fire Brick Works closed down recently to install a larger dryer, which places the management in a position to increase the output to a considerable extent.

Preparations are well under way for the reorganization of the Terra Cotta Lumber Co., which has been engaged in the manufacture of brick, tile, etc., at Toland's Landing, in Solano County, Cal., for the past four years. M. T. Mapel founded the business and is the present owner. Associated with him are his two sons, T. G. and C. Mapel. The new company is to be incorporated under the name of the Terra Cotta Products Co., with a capital of $150,000.

The sewer pipe manufacturers of the San Francisco Bay district are awaiting with interest the final decision regarding the abandonment of Camp Fremont, the army cantonment at Menlo Park, which if completed was to have a sewer system costing anywhere from $100,000 to $500,000. After the work of construction was well under way, the War Department issued orders for it to stop. Since then effort has been made to have the original plans carried out, but there seems still to be doubt as to whether the work will proceed. The high cost of the sewer system is given as one of the principal reasons for the abandonment. Work on Camp Kearny, near San Diego, Cal., is progressing rapidly.

Notwithstanding the seriously congested condition of railroad traffic in some sections of the country, the brick manufacturers in the vicinity of San Francisco, Cal., so far have not experienced a great deal of difficulty in getting sufficient cars to move their output. They have their troubles, tho. Many of the plants are sharing the difficulties of other industries in regard to labor, but here again, few instances are noted of specific cases where output has been curtailed by inability to get help. The greatest grievance of the brick men, it seems, is increased cost of production. They claim that in order to keep men, they are forced to pay higher wages than ever before, also that the prices of raw materials have been advancing right along. In view of present conditions of manufacture, higher prices on brick are predicted in this market in the very near future. As far as demand is concerned, few complaints are to be heard, altho few big new contracts are being booked at this time. The city building permits for July showed private brick construction in the sum of $1,112,759, which was a very good showing in comparison with the same month in previous years.

Colorado

The Longmont (Col.) Brick and Tile Co. are experiencing a rushing season at present. In less than a week's time four cars of silo block have been shipped to different parts of the state. Charles Gunning, who is connected with the above firm, has stated that an average of five or six cars of silo block and drain tile will be shipped every week to different points in Colorado and Wyoming.

Connecticut

Brickmakers in Connecticut are receiving the highest price on record for their output. Quotations have reached $15.50 per thousand which is considerably above the high water mark set in 1917 and manufacturers are by no means sure that the top has been reached. Labor troubles still are hampering operations in some sections but the decreased demand for brick has operated to the advantage of the manufacturers who are short handed.

Delaware

While handicaps, resulting from general war conditions, have put a temporary crimp in the brick manufacturing business in Wilmington, Del., according to James B. Oberly, who operates one of the largest plants in that section, this situation, it is believed, will not continue very long. It has brought right up to the manufacturers a number of serious problems and the result may be a solution that will be helpful after the war is over, as well as now. The case of Mr. Oberly is a concrete instance. While his yard has a capacity for 22,000,000 brick a year, he does not expect to manufacture more than 8,000,000 this year, for the following reasons: Fuel, with which to operate the plant, costs forty per cent. more than it did last year; labor is scarce and twenty-five per cent. more expensive than last year; contracts for extra hauling can be made only from day to day, and at advanced prices at that, and the demand is materially reduced, building being retarded. Only good grades of brick are now being manufactured at his yard, and, while some are being sold at $14 per 1,000, they are on old contracts, all new contracts being made at the current price of $16. While Mr. Oberly is not in a position to offer any solution for the various obstacles encountered, the situation, it is believed, will work out its own salvation. The tension in the labor market, for instance, is likely to be relaxed to some extent thru an unexpected quarter. So far the war has had no direct influence on colored help, except that it has provided more opportunities for it, but it has greatly influenced white labor. In the first place, there has been a big demand for skilled and unskilled help in the manufacture of powder and other munitions of war, of which Wilmington is one of the chief centers. High wages are

Marion

Steam Shovels, Dredges, Draglines and Kindred Machinery

IN digging material for making Bessemer Paving Brick, the Bessemer Limestone Company of Youngstown, Ohio, lean heavily upon Marion Shovels — for "Marions" have been for years under severe test in this Company's various plants, and have proved themselves worthy.

In their Bessemer, Pennsylvania, Plant, a combination of hard-to-handle materials is being satisfactorily taken out by Marion Shovels—

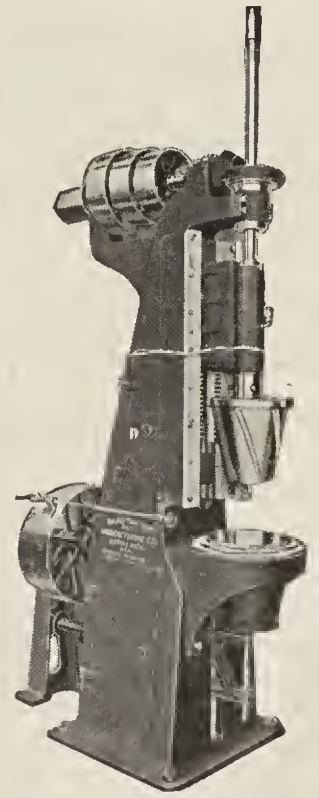
COAL, FIRE CLAY, SHALE AND LIMESTONE; ALL HANDLED PROFITABLY BY "MARIONS"

You'll like Marion Shovels—nearly everybody does—for the prompt way in which they respond to sudden increased demands for more speed and greater capacity. We'll gladly furnish particulars if you write about your work—no obligation to you.

The Marion Steam Shovel Company, Marion, Ohio

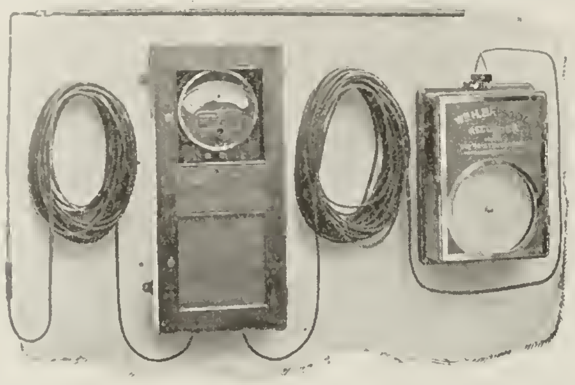
Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle

219 ESTABLISHED 1884


FLOWER POTS

You can manufacture them on most any brick or tile plant as a profitable side.line. Send us a sample of your clay. Let's find out if you can do it.

BAIRD MACHINE & MFG. CO.
54-56 Jefferson Avenue Detroit, Michigan



TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.
RECORDING PYROMETERS
BRING THE KILN INTO THE OFFICE

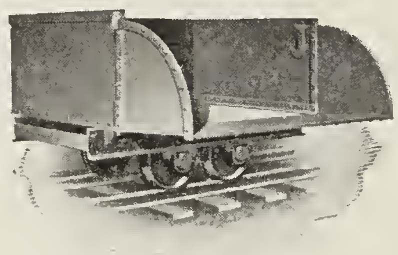
—right to the Superintendent's desk, giving him more time to do brain work.
The recorders bring him records in permanent form of the temperatures at the kiln. He can compare today's temperatures with that of yesterday, a month ago, or a year ago.

Down at the kilns an equal number of Bristol Indicating Pyrometers act as a guide for the burners. Team work of this sort eliminates all guess work and the resulting inefficiencies.

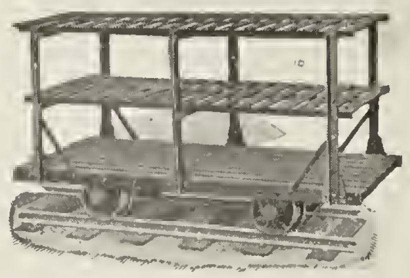
Suppose you allow us to show you how you also can increase team work and efficiency by the use of Bristol's Recording Instruments.

Write for Bulletin 163.

THE BRISTOL COMPANY, Waterbury, Conn.
Branch Offices:—Boston, New York, Pittsburgh, Chicago, San Francisco



WATT
CARS
"AT FIRST OR AT LAST?"
They stand for efficiency and durability. **Ask for catalogues.**
The Watt Mining Car Wheel Co.
Barnesville, Ohio, U. S. A.



paid. For various reasons this has proved more attractive to white workmen than to negroes, and it has made inroads on every class of labor—chiefly white. The military draft made it necessary for the munitions manufacturers to anticipate its results upon them, and, as a first step, the DuPont Powder Co. today started the experiment of making use of women directly in the manufacture of powder, the first twenty-five being put to work in the cutting department at the Carney's Point (N. J.) plant, which is located across the Delaware River from Wilmington. If the experiment proves successful, other women will be employed, and it seems to be only a question of time when women will be on an equal footing with men in the manufacture of explosives. If this works out, the inroads made by the draft will not only be compensated, but there should result some relief in the general labor market.

Idaho

The Nezperce (Ida.) Brick & Tile Co., is preparing to build additional kilns in order to supply the increasing demand for its products, according to Mr. Burg, the factory superintendent. The machinery of the plant could handle an output of 30,000 brick per day, but the present kiln room limits the capacity to about 12,000.

Illinois

The Salveson Face Brick Co., of Petersburg, Ill., capitalized at $35,000, has been incorporated by Thomas Salveson, Edward F. Bergen, and Fred J. Jurgens.

The contract between the Board of Local Improvement of Grayville, Ill., and J. R. Crews, of Fairfield, Ill., for the paving with brick of three miles of streets in Grayville, has been signed and the work started.

Indiana

Brick manufacturers at Evansville and in other cities and towns in southern Indiana report that trade is "off" at this time and they are at a loss to know when there will be any change for the better. As one Evansville manufacturer expressed it: "Trade is shot to pieces and we do not feel like making any prediction when it will improve. There has been little building in Evansville this season compared to former years." The contract was let a few days ago for the new Junior high school building at Evansville, to be built of brick at a cost of about $200,000. The contract has also been let for the new Blankenburg school at Evansville. This building will also be of brick and will cost about $50,000. John Andres, secretary and treasurer of the Standard Brick Manufacturing Co., said the company's jobber in Chicago wrote him a few days ago to the effect that the brick business in that city is "seventy-five per cent. off at the present time." However, the Standard Brick Manufacturing Co. is operating two of its plants in that city on full time. "We are trying to keep busy," said Mr. Andres "and are hoping that trade will show some improvement this fall and winter."

Iowa

About ten years ago a brick and tile company was organized in Fertile, Iowa, and a plant built and operated for a short time. Probably because of a lack of sufficient capital, the plant has been idle since the first year. The dilapidated buildings and sheds are now being torn down and removed.

Kentucky

The Kleymeyer-Klute Co., of Henderson, Ky., is furnishing the brick for a large tobacco warehouse being built by Edward Hodge at Owensboro, Ky. Work on the new warehouse has commenced and when finished, it will be one of the largest structures of its kind in that city.

Lea M. Parsons, of the Tyler Building Supply Co., of Louisville, Ky., notes that August was the biggest August in the company's history. This, however, was due in part to several large extras, one of which was for large deliveries to the Army camp of prepared roofing. Eliminating these several large extras, Mr. Parsons said, August would still take the high rank. The company is now making a number of deliveries on several brick jobs, but there is little else in sight, tho the Tyler company is optimistic about the immediate future.

A record of the work done by the State Fire Marshal, of Kentucky, in a campaign recently inaugurated, shows that a total of 200 frame structures has been condemned by the inspectors in seven cities and towns visited. These buildings have been torn down. In Danville, where a block of frame structures was condemned, a public-spirited citizen aided the Fire Marshal by constructing a brick cottage for an old negress resident in one of the sixteen doomed frames who defied the powers of the state to tear her house down over her head. The man who built the brick cottage which won the approval of the inspectors then exchanged it for the property of the old negro woman and all was well again.

The building material trades of Louisville are looking into the proposition of trade acceptances and the brick and tile men are taking a particular interest in the proposition. Just as this time the study has been restricted for the most part to the Louisville Hardwood Club, an organization of the lumber manufacturing interests of the city. It is stated that this Louisville organization is making preparations to set in motion a movement urging the whole lumber industry of the country to adopt the system. This is naturally being commented on by the brick and tile men, who are aware of the fact that if the lumber trades take hold of the idea and put it into effect it will be a comparatively easy matter for the brick and tile manufacturers to follow suit .

The well known and notorious Decline-in-Building-Construction tribe has no terrors for the R. B. Tyler Co., of Louisville, Ky., H. H. Frazier, sales manager of the company, noted, in a conversation with the representatives of the *Brick and Clay Record* that that company is handling a nice big lot of brick business. He named a few contracts signed in the last several weeks. These included 40,000 smooth red face brick for the Leyman Motor Co. garage, a large number of small orders for residence jobs, and several sizable jobs out in the state. In addition, during the past six weeks the company has booked orders for a million and a half common brick, including a half million for a church; 200,000 for the garage named above; 200,000 for the Kentucky & Indiana Bridge & Railway Co. roundhouse; 200,000 for sewers at the Army camp, and 100,000 for the Gulf Refinery Co. Immediately ahead things look a little off, but nobody is discouraged yet.

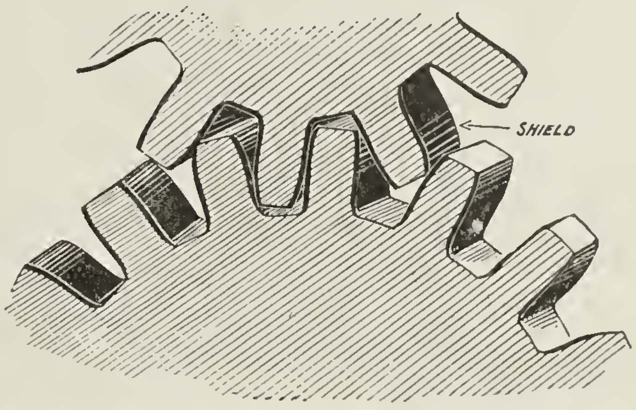
Kentucky brick manufacturers continue to be much concerned over the coal market situation. The coal men themselves, operating in the Kentucky fields, state that they are in a complete quandary as to what to expect, and in a large proportion of the cases have been declining business offered on the basis of the recently promulgated government price schedule. There are two fields, Western Kentucky and Eastern Kentucky. The former produces a lower grade of coal than the latter, and the government minimum of $1.95 for steam coal, plus the fifteen cents a ton allowed to the sell-

RINO LUBRICANT

It protects the heavy gears on dry pan, pug and auger, it stays on when ordinary greases fall off, it actually keeps the teeth of your gears separated by a shield, a film of Rino, and almost eliminates wear and noise. Ask for a small sample.

We Guarantee Satisfaction—Unconditionally.

The Ohio Filler & Shield Co.
Columbus, Ohio



The Minimum Gain

They pay for themselves in one year and in addition will save you $300.00.

Cyclone Boiler Grates

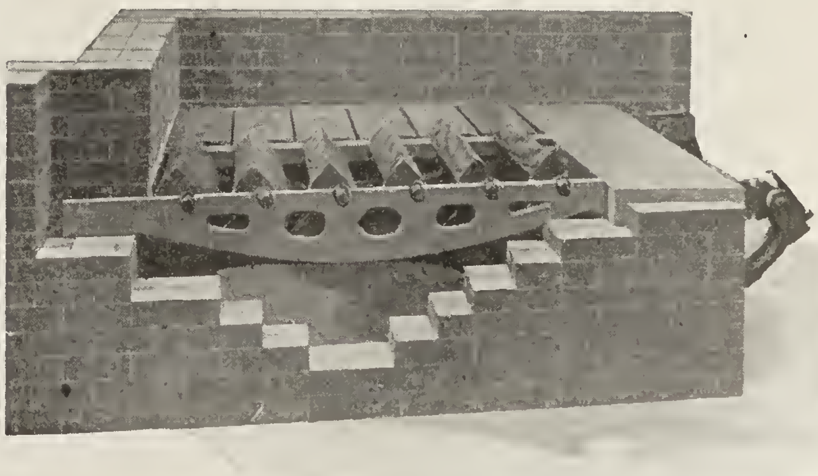
are sold to you with a guarantee that they will save 10% of your coal bill and on 90 days' trial.

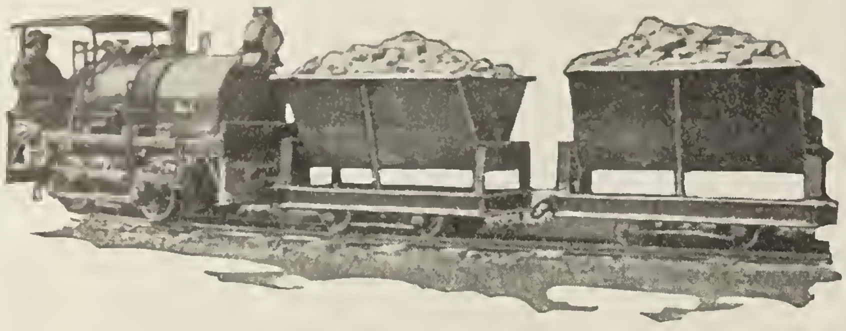
This guarantee and trial offer prove absolutely that we know these grates will do as we say they will do.

They-will-save-you-big-money. It is Guaranteed.

Get the details from the

Cyclone Grate Bar Company
Buffalo, N. Y.





Discard hand-pushing methods.

Sell your horses and mules—eliminate the barn, the feed, cleaning and veterinary nuisance. Make a bid for results and install the low priced

Bell Steam Locomotive

It Burns Kerosene Costing

9c per gallon, it requires no licensed Engineer, and it pulls a 50% heavier load than any other steam locomotive.

The BELL has a lower first cost and still does more work at a lower operating cost than any other type. Address the

Bell Locomotive Works, Inc.
30 Church Street New York

You can get a higher price for your brick if you guarantee it will be

Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated
Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H.—the dependable brand.

Write for circular and prices.

The Roessler & Hasslacher
Chemical Company
100 William St. New York

Chicago, Ill. St. Louis, Mo. Philadelphia, Pa.
Cincinnati, O. Kansas City, Mo. Boston, Mass.
Cleveland, O. San Francisco, Cal. New Orleans, La.

We carry a complete line of high grade chemicals for the clay industry

ing organization, does not mean much severe treatment to these operators, altho they have sent a committee to Washington to protest on behalf of operators who mines will not produce efficiently. Eastern Kentucky, however, declines to consider that this price was made to apply to it and is proceeding on the basis that it is to be allowed the Jellico scale, which begins at $2.15, with fifteen cents added for selling. This group also has sent a delegation to Washington to urge that the prices would be ruinous to many mines. The Southeastern Kentucky and Tennessee mines are tied up by a strike and the Western Kentucky mines are shipping on contracts and taking very few orders for coal on the new basis. Coal operators make no pretences that they do not expect an amended order giving them higher prices and experts from the capital are now in the field investigating claims of production costs. Meantime, the season is advancing and the winter demands will soon be in evidence and stocks of coal are nowhere being accumulated.

Maryland

The Howard Refractories Co., Equitable Building, Baltimore, Md., recently incorporated with a capital of $150,000, will acquire the plant and business of the Howard Fire Clay Co. The new concern is planning for the construction of five new kilns and manufacturing equipment in proposed plant extensions to provide for a capacity of 60,000 brick per day. J. H. Philbin is president of the company.

The Maryland Clay Products Co., of Lonaconing, Md., subsidiary to the Maryland Coal Co., of which J. Walter Galloway, Baltimore, is president, has started the manufacture of fire brick. When it gets fully under way, it will employ more than one hundred men and will have a daily capacity of 30,000 brick. Other clay products will be manufactured later. The plant, which was completed in record time, will be operated under the direction of L. B. Stevens.

Michigan

The Detroit (Mich.) Brick and Furnace Co. has been incorporated with a capital stock of $10,000. The incorporators are Ralph D., Kathleen B. and R. E. Hornbrook.

Controversy among members of the Detroit City Council recently regarding the respective merits of brick and segment block for sewer construction has culminated in a decision in favor of brick. Sewer construction planned for the city involves an expenditure of $16,000,000. Brick will be used exclusively in sewer construction work in Detroit as it has been in the past, the attempt to substitute other materials being futile.

The old Michigan Vitrified Brick Co., of Bay City, Mich., has reorganized under the name of the Bay City Brick Co., and has already started operations, after being closed since November, 1915. The company owns and mines its own coal and has a fully equipped plant near the city limits on the west side Saginaw-Bay City Road. Recently $15,000 was spent in repairs. I. N. Rodenbaugh, of Mancelona, is president of the new company, and John J. Cox, of Ann Arbor, is general manager. K. E. Norton, a practical engineer, is superintendent.

The Dresden Brick Co., Hammond Building, Detroit, thru General Manager Spencer, reports that the first seven months of this year were fifty per cent. ahead of the same period last year, but that August slumped, due principally to withdrawal of building loans by local banks. He is anticipating that business will pick up after the first week in September. As for prices, he declares they are about the same as they have been all summer, altho labor is scarce and there is a car shortage. Fortunately, his firm has a good stock of face brick on hand to fill orders.

New Jersey

Manufacturers of New Jersey are getting together to safeguard their interests during the war and to assist in devising means for speeding up production. Among those included in the first call to discuss organization was the National Fireproofing Co. The call was issued by the Bound Brook Manufacturers' Association and the aim was to select the largest and most representative manufacturer in each line.

New Mexico

At the annual meeting of the Gallup (N. Mex.) Brick Co., former Senator T. B. Catron was elected president; Geo. Page, vice-president; T. E. Purdy, secretary, and T. F. Smalling, treasurer. To meet the growth of the demand for this company's products, the plant is being enlarged by the addition of another brick machine and the construction of more kilns, which will increase the production by one-third of the present capacity.

A large deposit of clay or shale has been discovered in a 320-acre tract of land about three miles northeast of the Santa Fe., N. Mex. There has been about 500 feet of development done upon this property, and while most of it was in prospecting for coal and manganese, fine beds of brick clay or shale, about twenty-five feet thick and extending over most of this 320 acres, have been opened. A test made on the clay resulted in some well burned brick with good color and a clear metallic ring.

A reduction in the rate on state penitentiary brick from Santa Fe to Carrizozo, N. Mex., from 15 to 13 cents per hundred has been secured by the state corporation commission, acting on a petition filed by Thomas Hughes, superintendent of the penitentiary. The reduction was asked in order to allow penitentiary brick to compete with El Paso brick at Carrizozo, the latter paying a rate on brick of only 11 cents a hundred to that point. However, the distance from El Paso to Carrizozo is only 1.4 miles, as against 175 miles from Santa Fe to Carrizozo. The reduced rate went into effect August 25.

New York

Brick construction work in central New York will continue all winter despite weather conditions, according to officials of the Onondaga Vitrified Brick Co., of Syracuse, N. Y. The market now is a busy one with the company sending carload lots at greatly advanced prices all over this section. All the shale brick being used in the work at the Potsdam (N. Y.) Normal School and the Arrowhead Mills at Fulton, N. Y., is being furnished by this company. The last shipment of brick for the addition to the Onondaga Pottery Co.'s new plant has just been made, completing one of the largest summer contracts received by any firm in this city.

Ohio

There was a letting of a county and city paving contract at Findlay, Ohio, recently which includes about 13,000 square yards. The contract was awarded to Harry J. Hall, who is now getting figures on various makes of paving brick.

The Columbus (Ohio) Face Brick Club, of which Emmet Howard, of the Claycraft Brick Co., is president, is continuing its activities by meeting weekly. The club has been busy

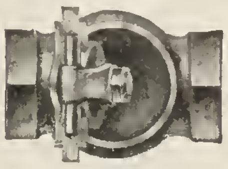
For promoting the flow of water in one direction and preventing reverse flow—for your boiler feed lines and returns, and general pump line service, *install*

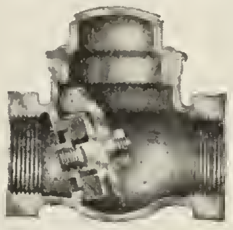
Jenkins Bros. Swing Check Valves

Excel in service and dependability because they are well made, of high-grade metal, and have clear, full area opening. The body is *globe-shaped,* producing both strength and compactness. Fitted with Jenkins Disc of a tough, flexible composition, especially adapted to withstand the pounding action peculiar to check valves.

As the disc is softer than the raised metal seat, the disc takes the wear and protects the seat from possible injury due to severe pounding. When a disc needs renewal you simply remove the cap and one or both of the plugs holding the clapper, and all the interior working parts can be lifted out for examination or repair.

The valves are made in brass and iron body, and may be installed either horizontally or vertically as required.





REG U.S. PAT OFF. TRADE JENKINS MARK Jenkins Bros

Jenkins Bros.

80 White Street, New York. 524 Atlantic Avenue, Boston.
133 N. 7th Street, Philadelphia. 300 W Lake Street, Chicago.
Jenkins Bros. Limited, Montreal, Canada, and London, E. C. England.

REG U.S. PAT OFF. TRADE JENKINS MARK Jenkins Bros

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. I can be done. Ask now.

Beighlee Electric Co.
Cleveland, Ohio

Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

A BRICK STORY

Perhaps it fits your case

Every brick that is bought from your plant to go into another man's wall is whose brick?

YOURS ALWAYS

Your future, the future of your plant, your reputation, is dependent on the action of **that** brick in every wall that you sell.

If it stays always a good brick in color and body, it is a perpetual advertisement beautiful—for you.

But, if it scums, if it shows up grey on a clear deep red, if it assumes in a few months a dirty-yellow-grey-whitish indescribable color, your reputation, your business is hurt.

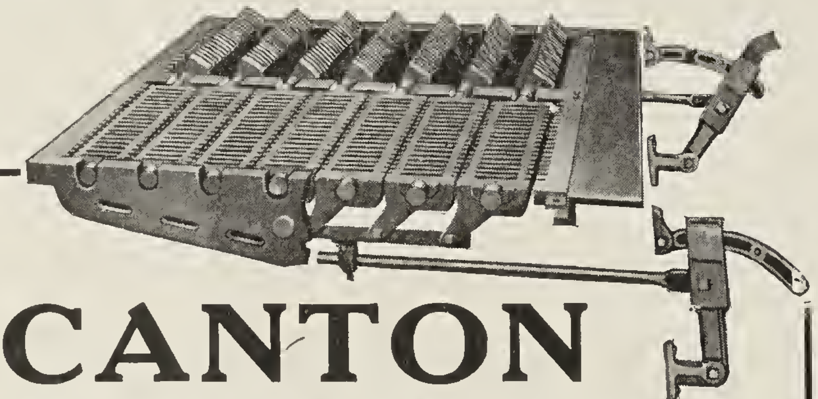
It is your fault—yours alone—a result of carelessness or ignorance, or both, which does not mend matters.

The cure, the preventative absolute of scum is

ROLLIN'S BARIUM CARBONATE

and if you will write us, we will tell you all about it, and how easy and surprisingly cheap is the process applied at your pug mill.

ROLLIN CHEMICAL COMPANY
Inc.
Charleston, West Virginia
General Sales Agents
National Aniline & Chemical Company
244 Madison Ave., New York City



CANTON
Shaking and Dumping
GRATES

Not a TRIAL Nor An EXPERIMENT

When it comes to saving fuel, keeping the fires clean, removing clinkers and ashes easily, these grates have proved their practical utility for many years.

The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

When you want Grates—don't forget to investigate the merits of the Canton Boiler Grate. Write for catalog.

THE CANTON GRATE CO.
1706 Woodland Ave.
CANTON - - - - OHIO

discussing building conditions and prospects for the coming year.

The McClellan Tile Co., of Cleveland, Ohio, is planning to erect a series of buildings and architects have already completed plans for the first unit of them. Contracts will probably be let soon for the erection of the buildings.

The paving brick trade in Ohio has been rather active, when existing war conditions are taken into consideration. The popularity of brick construction for the main and inter-county roads in Ohio is gradually growing and brick men see a good year before them for 1918. Paving brick plants are still working but a labor shortage has the effect of curtailing their output.

Face brick plants in Ohio are being hampered to a large extent by shortage of labor and very few of the "Buckeye" plants are producing more than sixty per cent. of their ordinary output. As the fall approaches men are seeking work in coal mines, in rubber factories, and iron and steel plants. In addition, high prices paid to farm laborers are attracting many of the men to the farm.

Charles Harrison, of the Gaddis-Harrison Brick Co., of Columbus, Ohio, reports a rather quiet trade just at present. "Some few school house lettings has increased the demand for common brick and that helps some," said Mr. Harrison. "But the face brick trade is quiet. Shipping is fairly active as the car supply is better than a month ago, but it is not yet right. We have to beg for cars to make our shipments. On the whole the trade is quiet and everyone appears to be waiting to see what will turn up."

The demand for common brick in Ohio territory is holding up fairly well, altho the volume of business is not as large as formerly. There is considerable factory construction going on and consequently common brick are being used in fairly large quantities. One of the larger factories projected in Columbus is that of the Monitor Motor Car Co., on West Fifth Avenue. It is planned to start construction soon on two buildings each of which will contain about 100,000 square feet of floor space. Office buildings and additional units will be erected later. Another building project is a colored Y. M. C. A. building to cost in the neighborhood of $100,000.

There is considerable paving brick work going on in Ohio despite war conditions and the high price of materials and labor. Some street paving is being done at Toledo, Fostoria, Dayton and Columbus. A job was also let at Lancaster. The Ohio highway commission, on August 15 and 16, opened bids for considerable brick paving, and will award the contracts for this work in the near future. The tendency on the part of public officials, especially those having in charge paving in cities and other political subdivisions, is to go ahead with paving wherever possible, despite the war. It is figured that good local transportation facilities are just as necessary for a successful prosecution of the war as the building of war machinery.

Oregon

A. H. Horn, of the Bend (Ore.) Brick Co., has announced that he intends, in the near future, to add pressed brick to the products made at his plant.

Pennsylvania

The New Castle (Pa.) Mining & Clay Products Company, New Castle, Pa., has been incorporated with a capital of $60,-

000, to operate a local clay working plant. C. H. Andrews heads the company.

The Shawmut (Pa.) Paving Brick Co., have a contract to supply 190,000 brick to Saugerties, N. Y., for paving purposes. The first two cars, containing about 16,000 brick, have just been sent to the job.

The National Fire Proofing Co., Pittsburgh, Pa., recently retired $125,000 of its serial bonds, thereby reducing the outstanding amount to $1,838,000. The original issue was for $2,500,000. Interest on the outstanding bonds is also being paid.

Rhode Island

Three buildings at the brick yard of the Ashaway (R. I.) Clay Co., were recently destroyed by fire. The loss suffered is estimated at nearly $50,000. An engine and boiler house, dryer, and tool shed, the latter three hundred feet long, were burned. The property had lately been taken over by a new concern. The firemen reached the scene of the blaze within a short time after the fire was discovered, but lack of water hampered their efforts in fighting the flames.

Tennessee

The plant of the Bristol (Tenn.) Brick Co., estimated to represent an investment of $30,000, was disposed of at a trustee's sale recently. Jacob Bewley purchased the plant for himself and other bondholders. While the plans of the purchasers have not been announced, it is understood that the plant is to be put into operation. It has a capacity of 50,000 brick daily.

* * *

New Akron-Cleveland Brick Pavement Planned

The great volume of rural and interurban trucking which has sprung up as a result of the congestion on railroads has been forcibly brought to the front in Northern Ohio, when influential organizations started a movement for a second paved road between Akron and Cleveland. The reason given is not only the congestion of pleasure cars on various days of the week on the present brick highway, but the constant use of the road, seven days a week, by commercial and industrial trucks.

A meeting held at the Cleveland Automobile Club, August 31, in furtherance of the project was attended by representatives of the chambers of commerce of the two cities, the automobile clubs of the two cities, farmers and business men along the proposed route, and members of the advisory board of the state highway department. At the meeting N. J. Dryfoos, vice-president of the Cleveland Chamber of Commerce, stated that the railroad situation today is such that business concerns are forced to resort to truck delivery wherever possible.

The state advisory board were taken on a tour over the proposed route and returned over the present brick highway. Between Stowes Corners and Bedford, a distance of fifteen miles, fifty-three trucks were passed. Figures indicate that from six in the morning to midnight a motor vehicle passes a given point on this road every fifteen seconds. According to the official survey of the road made by the National Paving Brick Manufacturers' Association, 9,806 vehicles are driven over the present road every seventy-two hours. The passenger traffic in this time is 27,000 persons and the freight tonnage twenty-two carloads of forty tons each. The proposed road is several miles shorter than the present highway.

You want

BURNING CONTROL

To get it—

You Need More Than Your Experience and Good Judgment

Why don't you try the Veritas System? It opens up entirely new methods of temperature control, it teaches you new points in burning that are not ordinarily evident, it indicates exactly, at any time, just what work the heat is accomplishing, it is always accurate and greatly increases the interest of the burners.

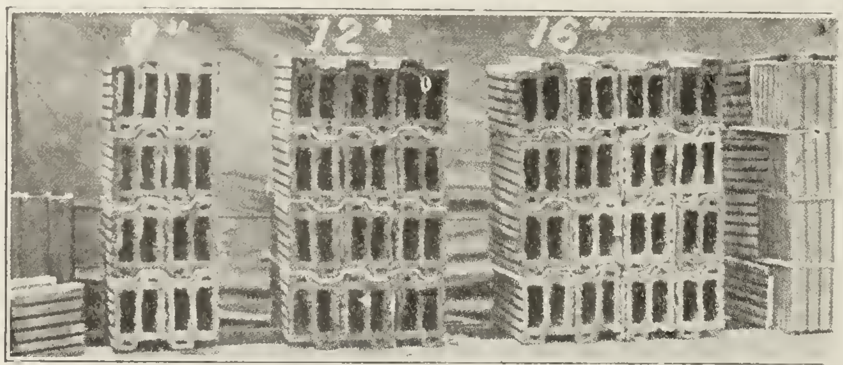
Such firms as the Cleveland Hydraulic Press Brick Co. and The Dover Fire Brick Co. are using it, and new high grade plants are added each week. We guarantee results or we won't install.

The Veritas Firing System Co.
Trenton, N. J.
and Herbert Forester, Box 37, Cleveland, O.

Look This Car Over Carefully

Note the way it is braced, and the manner in which it is put together. Stout and rugged, capable of resisting dipper hammering, big chunks dropped into it, derailments, etc. In addition it is Bottom Dump, it does not hammer itself to pieces when dumping.

The Youngstown Steel Car Company
Youngstown, Ohio



Hollow Ware Plants

Listen: If you want a hollow tile that is easy to make, easy to dry, easy to burn, and which has already met with universal approval by both masons and buyers—

Investigate

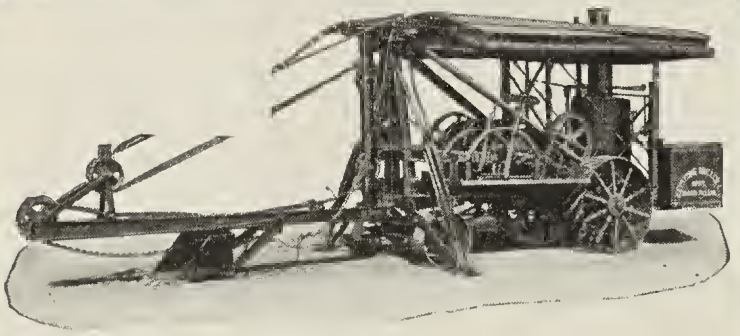
"LOXALL"

We are going to license it in every territory in the U. S. A. and your section may still be open. Get in touch with us at once.

J. E. EXNER

602 Lincoln Street COFFEYVILLE, KAN.

"LOXALL" is patented in the U. S. A. and Canada



KEYSTONE

PORTABILITY

THE KEYSTONE EXCAVATOR (MODEL 3) is a light traction shovel. It weighs ten tons, wheel-base, about ten feet. Rear wheels 55-inch in diameter with 16-inch tires. Front wheels 30 inches in diameter with 10-inch tires. It has two traction speeds and will go anywhere on its own power where you could take a loaded dump wagon.

SKIMMER BUCKET ½-YARD CAPACITY. Machine will load 250 to 500 cubic yards in ten hours, operated by two men. Replaces 25 to 50 hand shovellers, has powerful crowding thrust and will dig toughest fire clay. We will furnish names of brick manufacturers, cement plants, etc., using Keystone Shovels in pits under all conditions.

You save in first cost, up-keep, repair expense and **moving cost.** Get from one set-up to another in quick time. No planking necessary if ground is dry and solid.

Your Engineers agree that it is good business to install two light machines in place of one heavy unit. The explanation is **PORTABILITY!**

All operations illustrated in catalog, which will be sent on request.

KEYSTONE DRILLER CO., Beaver Falls, Pa

170 Broadway, New York City Carthage, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

BISQUE DOLL HEADS TO BE MADE IN OHIO

The European war can be said to be the cause of a new industry being located in the United States, a German manufacturer of bisque doll heads having just started business at East Liverpool, Ohio. A portion of the plant formerly occupied by the Brunt Electric Porcelain Co. has been leased by Ernest Reinhartz, and the first kiln of doll heads, made from eighteen mold shapes, has just been fired off with practically one hundred per cent. capacity. Reinhartz formerly operated a doll head pottery at Thuringen, Germany. The Kaiser's war wrecked his business, and he packed up and came to the "Land of the Free." For several months he has been preparing to place the Ohio plant in operation.

The industry is unlike any other clay shop in the Ohio Valley. In Germany, Reinhartz employed over one hundred people. His plants was one of the largest there. Doll body manufacturers have flooded the new plant with business, and the kiln capacity will be increased as early as possible. It is likely that a department will be added to the pottery to manufacture doll bodies, but this is a later consideration. The heads are cast in the same manner as is usual in casting pottery and china.

BUY EARLY

Buyers of domestic and imported ware are likely to find themselves in a serious predicament for their holiday supplies if they continue to follow what appears to be their present inclination. Holding off too long in ordering merchandise for Christmas period distribution is not a wise policy to pursue in view of the fact that foreign supplies are limited. Altho France is making weekly shipments to this country, the supply is inadequate to take care of the wants of all distributors. Some retailers are going to lose money—and also an opportunity to have their doll galleries arranged with a representation of some real dolls, as the demands will be so great it will be hardly possible to take care of them. Early ordering will mean sure deliveries, and buyers should not lose sight of this important fact.

GERMAN PRISONERS INSTRUCT FRENCH POTTERS

At a recent meeting of the French Ceramic Society, it was stated that the military authorities had made an industrial census of German prisoners, and had offered the Ceramic Syndicate to place at the disposal of a manufacturer, to be nominated by that body, a certain number of these prisoners, skilled in the potter's art, provided they were employed in a works where the operations could be inspected by other pottery manufacturers, so that the latter could gather information regarding any special methods employed by the men. M. Loebnitz mentioned that he knew of two instances where the system had given good results. These goods were made in France before the war but not so cheaply as in Germany; and by employing prisoners, who altered the molds and introduced changes into the manufacturing process, it had now become possible to rival German makers in point of cost.

Silas M. Ferguson, aged sixty-three years, for fifty-five years a resident of East Liverpool, Ohio, and one of the original incorporators of the Potters Co-Operative Co., of that city, died from a result of a complication of ailments after ten days' illness. When the East Liverpool Potteries was formed some years ago, he was given the position of general superintendent of all plants. There were five potteries in this combination. Previous to his last illness he was chief engineer at the electric porcelain plant of R. Thomas & Sons. Thomas P. Ferguson, assistant manager for the East Liverpool office of Rudolph Geartner & Co., of New York, potters' supply distributors, is a son. Mr. Ferguson was one of the best known pottery manufacturers in the western district. He was a close student of all ceramic works.

William Thomas Burton, aged 74 years, one of the pioneer pottery owners in the East Liverpool (Ohio) district, having been with the firm of Burton, McNicol Pottery Co., died suddenly at the home of a daughter at Wellsville, Ohio, of heart trouble. He was born in Staffordshire, England, in 1842, and came to Baltimore, Md., with his parents at the age of six years. A few years later the family located in East Liverpool, where father and son were identified with the pottery industry for many years.

Two new kilns have just been completed at the plant of the Saxon plant of the French China Co., at Sebring, Ohio. The clav shops have been augmented to care for the increased kiln capacity and a new sagger shop, with a capacity of 1,000 saggers a day has just been placed in operation. A hydraulic sagger press has been installed in this plant, and where the companv can install machinery of an improved type, this is being done.

Two men were seriously injured at the plant of the Onondaga Pottery Co., the other day, when a brick-laden elevator fell three stories and buried them under several tons of building materials. John Vauzakn suffered a fractured leg, cuts, bruises, and internal injuries. Philip Jaba escaped with cuts and bruises. Both men were laborers engaged in the construction work on the addition being made to the Onondaga Pottery Co.'s plant.

All real estate and personal property of the former Ohio China Co., at East Palestine, Ohio, is to be sold September 1 by R. B. Taggart, of that place, who is the receiver for the company. The plant has been idle for several years, and was last operated under the management of William McConnell. At last accounts there was considerable bisque ware in the bins, mainly sugars and creams.

The Roanoke (Va.) Art Tile Co., Times Building, Roanoke, recently incorporated, is planning for the erection of a local plant for the manufacture of art tiles. The initial plant is estimated to cost about $10,000 and will have a capacity of one hundred squares of tile roofing daily. O. A. Kerns is president.

The Western Pottery Co., of Denver, Col., has begun the construction of a two-story brick building for the manufacture of fancy pottery. The new factory building will cost about $4,000.

The Virginia Potteries Co., Huntington, W. Va., is reported to be planning the construction of a new addition to its plant. Theabold, News

The government has again entered the crockery market, and is buying large quantities—purchasing ware for the cantonment and the National Guard camps.

The Use of Lakewoods

Perhaps you are not interested in the manufacture of brick, yet you will be interested in seeing how a brick company solved transportation problems similar to yours.

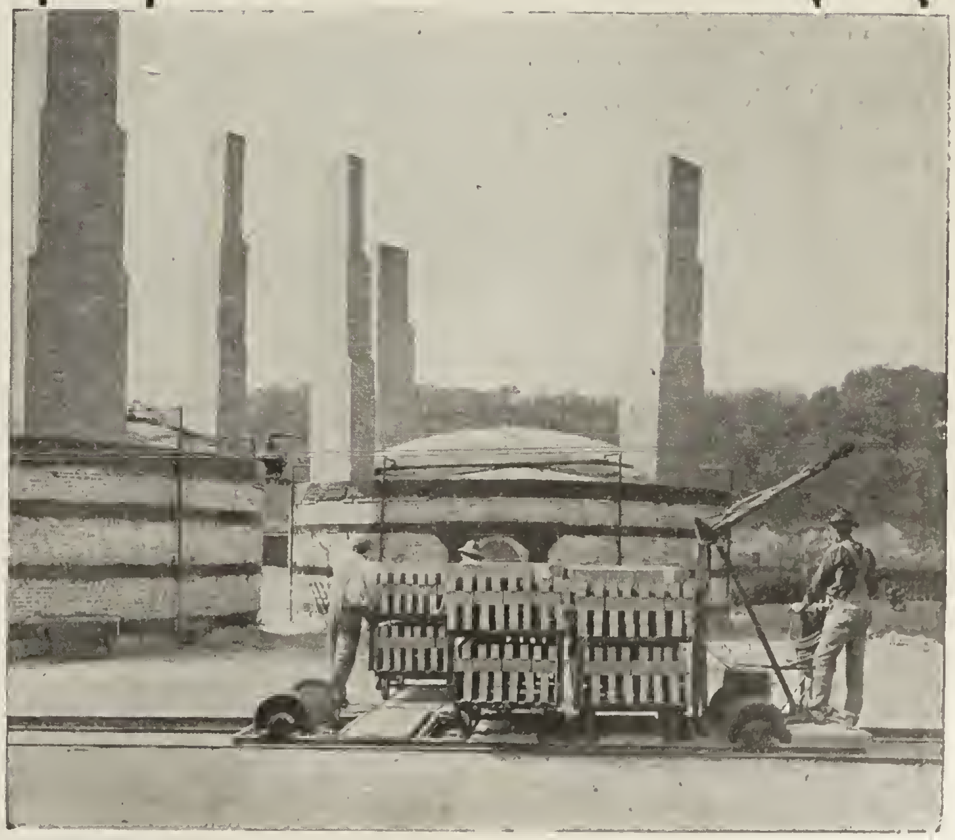
Over a thousand dryer cars, dump cars and flat cars were chosen from the Lakewood Line to assist the Sayre and Fisher Company in the making of Brick.

Dryer, V Dump
or
Flat Cars

Tell us your requirements, we can help you as we have helped others. In fact let us become your car department. Quick delivery is promised as we can fill from stock. For results

Link up with Lakewood

The
Lakewood Engineering Co.
Cleveland, O.



IF IT'S A QUESTION OF KILNS—
WE CAN ANSWER IT

Equally efficient in round, square or rectangular kilns, single or multiple stack type. New Hook Kilns cost less, as a rule, than kilns of other styles. Old kilns can be changed to our type at comparatively small expense.

Give us number and size of your kilns, kind of ware, burning time and fuel consumption. We will estimate cost of installation and saving that can be effected.

Grate Bars, Bands, Lugs, Ventilators, Castings

HOOK PATENT KILN CO.
High and Spring Streets
COLUMBUS, OHIO

STRAWS *that* SHOW *the* WIND

Brief Paragraphs from Many Points Indicating the Market's Trend in the Light of Building Activity

Superintendent of Buildings William P. O'Rourke is of the opinion that Newark, N. J., will greatly benefit and that real estate and building will be stimulated as the result of government structures to be erected at Port Terminal. August, 1917, with building projects of an estimated valuation of $566,718, is just $1,917 ahead of August 1916, but the building for the first eight months shows a large gain over the totals for the corresponding period of 1916. Excepting a very slight decrease for June every month of this year has shown an increase over the corresponding month of last year. The grand total of building projects to date since January 1, is $6,318,619, as against $5,497,811 for 1916, an increase of $820,800. Despite the high cost of building material it is predicted that Newark will close 1917 with a million-dollar excess over last year in toal value of new buildings.

* * *

The building situation in Paterson, N. J., and vicinity is improving. While the actual construction has not begun the outlook is better and many are considering building now who, two months ago, decided to hold their projects over until next year. The fact that a great shipyard is to be constructed at Newark, N. J., calling for houses sufficient to care for the families of 15,000 employes, is doing much to stimulate the building situation in Paterson, despite the fact that it is some distance from Newark. Still, so many who work in Newark live in Paterson that Paterson and some of its suburbs expect to benefit by the organization of the yard. No mills are coming out, so far as known, but a number are now in process of erection. Many dwellings are under consideration but no plans have been made. Dwellings are the principal source of building interest at the moment.

* * *

The report of Building Inspector Preston, of Wilmington, Del., for the last week in August indicates a drifting back toward normal conditions, for, among other things, it showed permits issued for eleven dwellings. While this is an insignificant number, as compared with normal times, when it is not an uncommon thing for permits to be issued in a week for seventy-five to one hundred dwellings, and sometimes more, it is better than it has been for some time. According to building records, there have been no permits issued for dwellings for several weeks prior to the last week in August. The local demand for houses is unprecedented, many persons engaged in business here being obliged to live elsewhere and "doubling up" being the rule all over the city, but lack of help, together with the high cost of materials, has deterred building, which now, however, appears to have taken a turn for the better.

* * *

Owing to the high cost of labor and material, there has been a decided decline in building operations in Allentown, Pa., in the Lehigh Valley. Building operations in that city for 1917 are $292,000 less than last year, according to figures of Frank R. Minner, the city's building inspector. The inspector reported that three building operations have been postponed for which plans had been laid for 180 dwelling houses, all due to the present high prices. The value of these operations, according to his figures, would run approximately $1,150,000. The building operations of every nature in this city for 1917 will aggregate $1,500,000, as against $2,700,000 during last year, showing a depreciation of over a million dollars.

* * *

Building activities may soon begin in Columbus again. There has been an increasing demand for more homes to take care of the growing population and builders expect there will be an answer to the demand. A building show that is being planned will also help to create some desires to build. The report of the building department of the city for August has just been made public and it shows a decrease over last year. The sharpness of the decrease is partly caused by the extraordinarily heavy building of 1916 which was a record year. Comparisons with that year are, of course, small in contrast. The number of permits issued in August, 1917, was 130 as against 284 the year before and the valuation was $283,725, as compared to $548,720 in 1916. The July figures were 161 permits with a valuation of $268,735 in 1917 and 268 permits with a total value of $563,085 in 1916. During the eight months of 1916, there were 2,234 permits given out, with a valuation of $5,273,240 and in the first eight months of this year 1,523 permits were granted with a value of $2,987,190.

* * *

Louisville brick and clay products interests are expecting business to develop all of a sudden. Just as this time a great deal of new construction has not been discovered, but it is expected to materialize soon. One of the reasons given in support of this expectation is that the retail merchants and the manufacturers of the city are doing by far the largest business of their careers, while the jobbing houses are matching them in their lines. A situation like this is considered bound to bring building. Typical of the retailers experiences is that of one of the largest department stores of the city. Its August business, it is given out, was just three times as large as the business done in the same month a year ago.

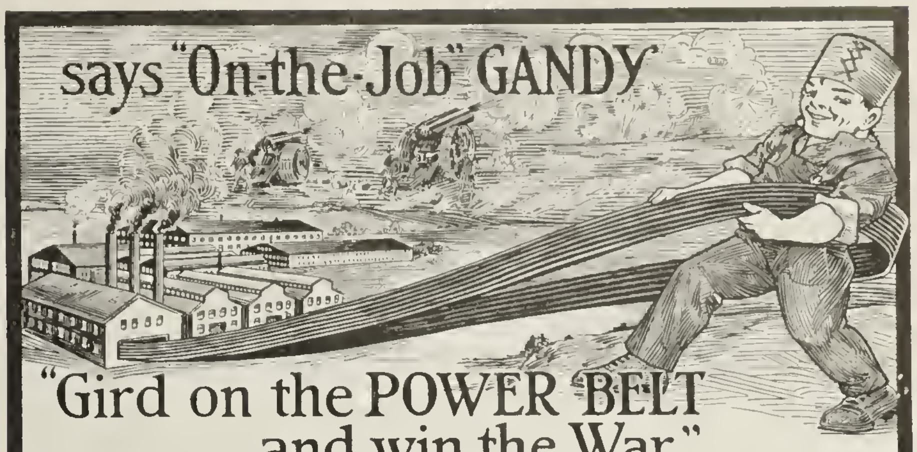
* * *

The brick business in the city of Detroit cannot be termed as "booming" but is really quite normal. There has been a slight dropping off in some building lines, but on account of the number of jobs already started the demand has been steady for common brick as well as face brick for various kinds of work. Every month in 1917 has either held its own or gone ahead of the same months last year—the exception being August, which so far has been the worst month of 1917.

There are various causes for August being such a slow month. One is the conscription, which has more or less upset calculations, many of the men doing building being of the draft ages. Another reason—probably the most patent reaconstruction or building loans.

Detroit business men are optimistic, however, and fully believe that September and October are going to be considerably better for the manufacturer and the dealer in brick.

The bulk of the building at present is apartment houses, principally two and three room apartments. It is true that at the present time Detroit has more than its usual quota of vacant apartments, but this is due to the conscription and the number of young men who have enlisted either in the army, navy, various hospital units, ambulance corps, and in the various officers' training camps. Real estate men believe


says "On-the-Job" GANDY
"Gird on the POWER BELT and win the War"

"It's America's industries, three thousand miles back of the first line of defense, that are scheduled to deliver the knockout blow to Mars.

"It is YOUR plant, and your mill, and your mine Uncle Sam looks to. And it is upon lieutenants such as I, "On-the-Job" GANDY, the original stitched cotton duck POWER belt, that you can depend to make every revolution of shaft, wheel and cog do its full duty.

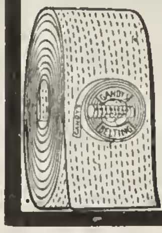
"The industrial world has 'counted on me' for over 37 years. You can count on me now during the stress of forced production to get ALL THE PULL FROM THE PULLEY—to pick up and deliver every ounce of power.

"Warning! Don't run the risk of having your plant crippled by tied-up traffic. Remember what lack of equipment did for the British army at the beginning of the war, and get your orders in now for your belting requirements, ordering either from your jobber or factory direct."

The painted green edge and well known GANDY trademark are the "identification tags" of the POWER belt. Look for them.

Samples and Prices on request

The Gandy Belting Co.
732 West Pratt Street
Baltimore, Md., U. S. A.
New York Branch, 36 Warren Street



"No more of that for my truck drivers."

"My new Kissel Truck with the ALL-YEAR Cab gives them full protection in wet and stormy weather and keeps them warm and comfortable in the winter."

New Kissel ALL-YEAR Cab

Insures ALL-YEAR Comfort for Drivers and Increased Results for Owners

The new **ALL-YEAR Cab** is revolutionizing truck driving in the brick and clay industry. It protects drivers in winter weather—increases their efficiency—discourages speeding—diminishes accidents—keeps trucks in operation the year round regardless of weather.

In its summer form, it is a cool open housing. In winter the **ALL-YEAR Cab** is quickly changed into a warm, dry, closed weather-proof cab—by adding the winter attachments.

KISSEL TRUCKS

A Truck for Every Purpose

Unusual strength, power and durability are some of the characteristics of the five new Kissel Truck models, designed and built to meet economically and efficiently the present day haulage and delivery requirements in the brick and clay industry.

See your Kissel dealer or write us for literature on the new Kissel Trucks and the ALL-YEAR Cab.

KISSEL MOTOR CAR CO
Hartford, Wis., U. S. A.

that after September 15, when people return from their vacations, there will be the normal demand for flats and apartments. As for prices, they have not been reduced.

⁂

Taking the situation as a whole, few complaints are being registered by the manufacturers of and dealers in brick and allied products in the vicinity of San Francisco, Cal. The commandeering of a large number of railroad cars is causing a little uncertainty in regard to deliveries. Most of the concerns with headquarters in San Francisco have their plants in some of the outlying towns and are unable to gauge shipments as they have in the past. So far as the demand is concerned, the outlook is brighter than for some time. After a period of comparative quiet in the signing up of large contracts locally, a number of large jobs are in sight, which, if carried out as planned at present, will require several million brick within the next few months. A prominent factor in the new work being figured, is the large number of additions to industrial plants in the Bay district and additions to established factories. Contracts will soon be let for several large brick warehouses also. Some of the brick manufacturers claim to have orders enough on the boards to keep them fairly busy for the remainder of the year. As the harvesting season draws to a close in some of the agricultural sections of the state, men are being released for other common labor, and the situation in this regard at the brick plants is reported slightly improved in the past fortnight.

⁂

SLAG TESTS *for* REFRACTORY BRICK USED *in the* IRON *and* STEEL INDUSTRY

By C. E. Nesbitt and M. L. Bell

EARLY IN THE STUDY of the physical properties of refractory material in the iron and steel industry, the necessity for a slag test which would give information as to the relative resistance of refractory brick to various slags and fluxes become apparent. To be of use in specifications it was evident that such a test must be rapid, easily performed, and applicable to any kind of brick or slag, and should as far as possible approach conditions similar to those under which the brick is to be used.

As a basis for a test it was decided to place the brick in contact with a certain slag and apply heat until the slag was thoroly melted. When cold the amount of penetration was observed. In the preliminary work the piling of the slag on the brick was tried, but the results were negative, as the slag ran off the brick as soon as melted, producing no marked penetration. Kaolin rings were tried in hope of confining the slag but these failed to accomplish their purpose. Pockets were next cut in the brick by chipping. This proved to be successful in confining the slag but the chipping was too slow and it was difficult to secure uniform cavities.

Drilling by means of a press was next resorted to, and uniform pockets as near as the nature of brick material would permit were drilled. The brick were then heated to the testing temperature and a known quantity of slag was placed in the drilled cavities. After the brick had become cold they were broken thru the slag cavity and examined. Visual examination proved of small value, as results could not be accurately compared; hence it was found necessary to devise some means by which the amount of penetration could be measured. This was accomplished by sawing the brick so that one of the sawed faces accurately bisected the center of the original cavity, and the area of slag penetration thus exposed was then measured by means of a planimeter.

To standardize the method it became necessary to determine whether the fineness of the slag, the time to which the slag was exposed to the brick, and the amount of slag used in the test had any effect upon the amount of penetration.

EFFECT OF FINENESS OF SLAG

To determine the effect of fineness of the slag on the amount of penetration, blast-furnace and heating-furnace slags were selected as representative of the iron and steel industry. Each was ground and separated into two sizes, coarse and fine. The coarse material was that which passed a 40-mesh and remained on a 60-mesh sieve, while the fine was represented by that which passed thru a 100-mesh sieve. The slag test was then run in the usual manner on standard hearth and bosh blast-furnace brick. The average results were as follows:

		Penetration, Sq. In.
Blast-furnace slag	40 to 60-mesh	1.54
	100-mesh	1.67
Heating-furnace slag	40 to 60-mesh	1.77
	100-mesh	1.72

From the above results it is apparent that the degree of fineness of the slag does not affect the penetration.

TIME AND PENETRATION

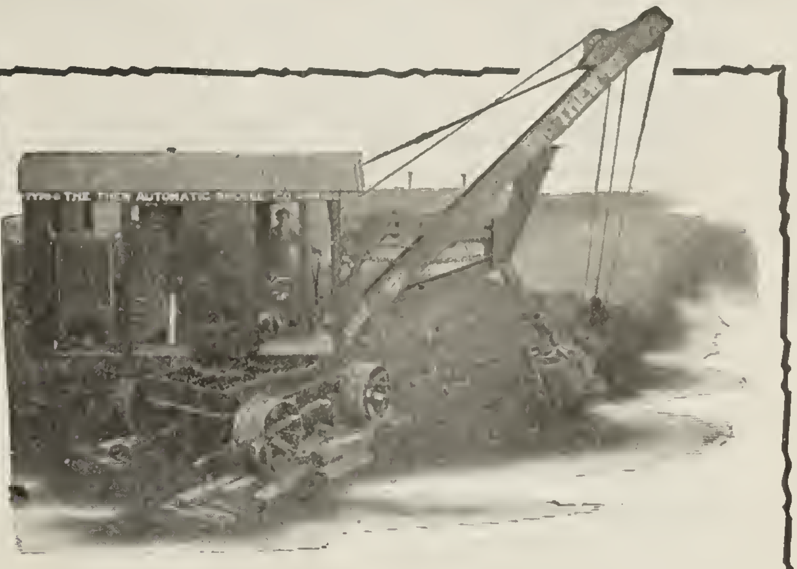
To determine whether the time to which the slag was exposed to the brick, and also whether the amount of slag used in the test affected the penetration, a series of slag tests were run, in which the slag was exposed to the brick at testing temperature for two, four and six hours, with the quantity of slag varying from 35 to 140 g. The results of slag penetration are given in Table I.

Table I.—Penetration of Slag for Various Times of Exposure and Amounts of Slag.

Time of Exposure, hours.	Penetration for—Grams of Slag used, sq. in. 35	70	105	140
2	0.49	0.58	......	......
2	0.51	......	0.79	......
2	0.45	......	......	0.79
4	0.51	0.58	......	......
4	0.43	......	0.78	......
4	0.43	......	......	0.83
6	0.46	0.52	......	......
6	0.44	......	0.70	......
6	0.52	......	......	0.89
Average	0.45	0.56	0.76	0.84
Area exposed to slag action, sq. in.	5.94	7.97	8.57	9.44
Ratio of exposed area to standard cavity	1.00	1.34	1.44	1.59
Average slag penetration divided by ratio	0.45	0.42	0.53	0.53

From Table I it is shown that the amount of penetration is not increased by keeping the brick in contact with the slag for a longer period than two hours. Preliminary work had shown that one hour would in most cases give complete penetration, so that the adoption of two hours was considered sufficient to guarantee full action of the slag.

It will also be noted that there are two variables, namely, the amount of slag used and the area exposed to slag action. To make the average results comparable these variables must be eliminated. This was accomplished by reducing the area exposed to slag action to a unit figure by dividing the area of the standard cavity (5.94 sq. in.) into each of the other areas (columns 3, 4 and 5 in Table I). The ratio figures thus ob-



THREE MEN and a THEW

are equivalent to a former pit gang of THIRTEEN MEN.

The Monongahela Clay Manufacturing Co., of Monongahela, Pa., say, that in getting out over 200 tons of hard blue shale they do not work the shovel to capacity—nor use it full time in its ten hour shift—yet it saves them money, and there is no worry over the old labor conditions. Before installing the shovel it required from twelve to fifteen men to do this same work.

Summarize that—one Thew displaces ten or more men, it digs all of the shale that is used, and only works intermittently. It produces 200 tons of shale, eliminates labor trouble and saves money in the operation.

Write a letter to us today, asking for additional proof, costs and relative data.

Circular "27-C" Gives Complete Information.

The Thew Automatic Shovel Co.

Lorain, Ohio

New York Office—30 Church Street

SAY I SAW IT IN BRICK AND CLAY RECORD

The Price of Coal

subject to such uncertain conditions as exist at the present time, demands that you keep a watchful eye and an open ear upon this big factor of your operating expense.

The price of coal will not be any lower than it now is, and will undoubtedly go much higher within the next few months, because of the material increase in miner's wages and mining supplies.

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

tained were divided into the average slag penetration and the results (slag penetration divided by ratio) made comparable. These figures prove that increasing the amount of slag does not affect the slag penetration, when reduced to a unit of area exposed to slag action. The variation in the results are within checking limits and the difference due to the variation in the brick themselves.

DRILLED POCKET AND MOLTEN SLAG TEST

The question of the advisability of performing a slag test in a drilled pocket as compared to immersing the brick in molten slag was next studied. Brick from the same shipment were tested, one-half of them by the drilled-pocket method in the usual way, while the others were placed on edge in a refractory tray or shallow box, in which slag was placed to a depth of 1½ in. All were heated at a uniform rate to 1,350 degrees C. and held for one hour. After cooling the brick were cut at right angles to their length into two or three sections, the cuts being about 1 in. apart. The drilled-pocket samples were cut in the usual way, a second cut being then made at right angles to the first. The areas of slag penetration thus exposed were measured with a planimeter; also, the linear inches of slag contact on the surface of the brick were measured. Heating furnace slag was used in this test. Table II gives the results of these tests.

TABLE II.—RESULTS OF SLAG PENETRATION.

		Immersion Method			Drilled-Pocket Method		
Sample	Area No.	Slag Penetration, sq. in.	Slag Contact of Brick, linear in.	Slag Penetration per linear inch of Contact.	Slag Penetration, sq. in.	Slag Contact of Brick, linear in.	Slag Penetration per linear inch of Contact.
A	1	5.50	7.0	0.78	1.67	3.5	0.48
	2	1.68	7.0	0.24	1.48	3.5	0.42
	3	2.50	7.0	0.36	......	....	......
B	1	4.96	8.5	0.58	1.10	3.5	0.31
	2	4.82	8.5	0.55	1.06	3.5	0.30
C	1	0.91	10.0	0.09	0.88	3.5	0.25
	2	0.57	10.0	0.10	0.71	3.5	0.20

From the results it is evident that greater uniformity of results is obtained by use of the drilled pocket than by immersion. The drilling of pockets to contain the slag is also preferable to the use of large trays to contain the slag, because of economy of space in the furnace.

The drilled-pocket method as at present adopted has several points which recommend it as a standard method. It is very flexible, as cavities, slags, temperature, and the amount of slag can be easily changed to correspond to the service conditions under which the brick are to be used. It is rapid, easily performed, and results are expressed by a definite numerical quantity.

When clay brick for blast-furnace or similar uses are to be tested, blast-furnace and heating-furnace slags are used. Silica brick for open-hearth use are tested with open-hearth and heating-furnace slags.

⁂

California Brickmaker Sums Up Situation

W. W. Dennis, sales manager of the McNear Brick Agency, San Francisco, comments upon the brick situation: "The fuel market is very high, labor is scarce and high, and the price of manufacture, no doubt, has increased thirty per cent. within the past ninety days. In view of these facts, there is likely to be an advance in the price of brick before the end of the year. In my opinion companies will be forced to raise prices if they intend to stay in business. There is enough business on the boards, however, to keep the yards operating for the balance of the year, and I feel that 1918 will take care of itself.

Conserve the Coal

1. Inquire into the methods employed by your fireman and consider his methods in relation to those suggested by the Bureau of Mines.
2. Learn what plants in your locality secure the best results from coal.
3. Endeavor to have the wasteful users of coal profit by the best experience of the locality.
4. Improve all local methods by consultation with the Bureau of Mines and study of the stoking methods recommended by the Bureau.
5. Buy your coal as near home as possible.

Now is the time for every user of coal to endeavor to reduce his requirements according to the committee of the Chamber of Commerce of the United States co-operating with the Council of National Defense which sends forth the above five suggestions in a special war bulletin.

Heretofore, the committee declares, the man who used more coal than he needed might feel that he caused no loss except to his own bank account. Few were influenced by thought of conserving the world's supply of coal. Today coal is a sinew of war, is the conclusion, and he who unnecessarily reduces the country's available stock of coal may curtail the nation's energy in the great industrial conflict.

"In the past if the available supply of coal was not sufficient for all needs, however extravagant, new mines could be opened and heavier withdrawals made from the great supply of coal in the ground; even the most extravagant users of coal could be supplied without interfering with other industries," the bulletin goes on.

NECESSARY LIMITS MUST BE REGARDED

Today there is a limit to the amount of coal which should be mined, according to the bulletin. In the great concentration of national energy toward prosecuting the war, men are not available to open new coal mines to meet extravagant needs. Transportation facilities are burdened to the limit of capacity. These and other factors establish a definite limit to the amount of coal which should be made available for use during the war.

Another important phase of the situation comes from the control of coal prices by the government. An effect of such price regulation may be reduction in output. It is hardly to be expected that the fixing of prices can be carried on without controversies with producers interrupting operations and without repressing the adventurous spirit necessary to increase output.

"Opposed to these limitations on the available supply of coal is the greatest demand for coal ever known," the bulletin continues. "The railroads are requiring more coal than ever before. The war and its stimulation upon industry has called upon our factories for an output beyond all previous peak loads. Our allies depend upon us for coal. Neutral countries depend upon us for coal. Good use can be made of all available coal.

COAL USER MUST BE RESPONSIBLE

"No thinking man can fail to realize the obligation which this situation imposes upon the user of coal. On a vast scale the situation is similar to that where people are in an open boat at sea with a limited supply of food. The man who wastes coal today is an enemy of mankind.

"Under these circumstances all business men are called upon to give thought to avoiding the waste of coal. Let every man

YOUR ENTIRE POWER-TRANSMISSION EQUIPMENT

will last longer, deliver more power and give better service if it is equipped with

Cork-Insert Pulleys

"The Pulleys that Pull"

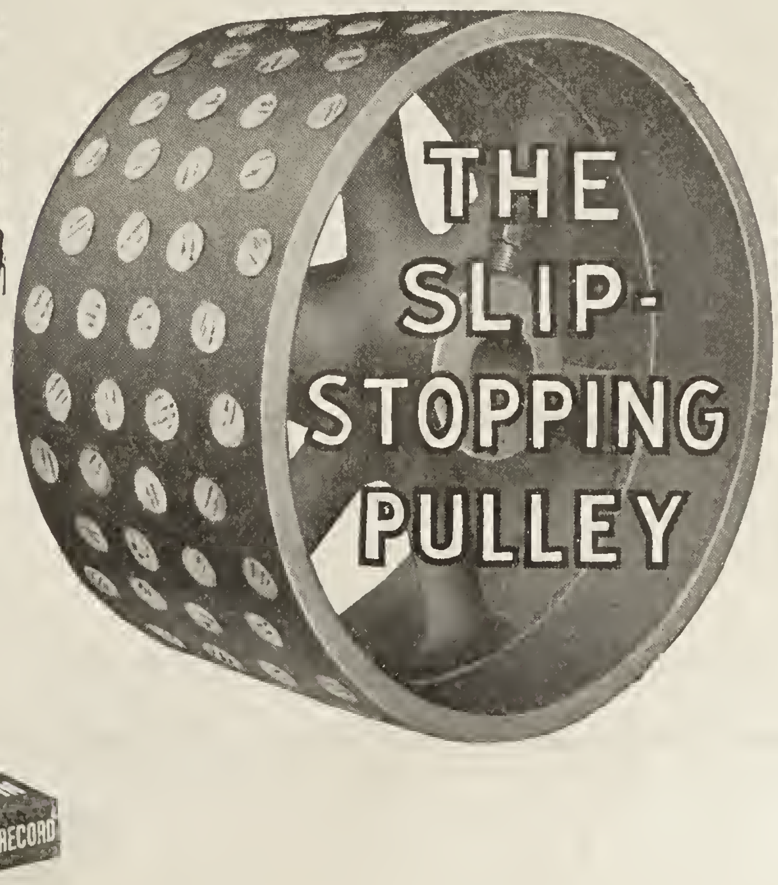
They Prevent Belt Slipping

This fact explains why your expensive belts will last for months and even for years longer. They cling tight to the pulley, they don't slip and burn.

The belts are run loose over the pulleys—which of course eliminates the strain on shafting and hangers—and hot boxes—and an excess power consumption.

A few dollars invested in these pulleys means hundreds saved in other ways. Ask for proof—now.

THE CORK INSERT CO.
168 Federal St., Boston, Mass.



SAY "I SAW IT IN BRICK AND CLAY RECORD"

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.20
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.25
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scumming and Efflorescence	.50
Seger's Collected Works	3.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, Book Department,

Brick and Clay Record
445 Plymouth Court, Chicago, Ill.

consider how his coal requirements can be reduced. Let all organizations of business men engage in a vigorous effort to promote the discussion of wasteful methods in coal consumption and the adoption in all power plants of those stoking methods which produce power without waste of coal."

Public obligation and selfish interest combine to make this the time for business men to undertake the long delayed concerted effort to improve power house practice, the bulletin says. No man today can say whose requirements may remain unsatisfied if the available supply of coal is distributed without meeting all requirements All should act together so that no one may suffer because someone has been wastefully extravagant in the use of coal.

BOILER STOKING METHODS INVESTIGATED

The Bureau of Mines has made a study for years of stoking methods. Elaborate investigations and experiments have been conducted and the results of what has been done are available to every user of coal. The Director of the Bureau of Mines desires that users of coal call upon this division of the government for advice and assistance.

In this connection it may be said that the Bureau of Mines has analyzed samples of coal from all sections of the United States and is already prepared to give information regarding the best uses to be made of different kinds and grades of coal consumption which come from consideration of the Bureau to give effective assistance in bringing about improved stoking methods. Their tests and the experience of users of coal demonstrate that an amazing saving may be had without change of coal or equipment by merely controlling the fireman and his method of putting coal under the boiler.

REAL WORK TO BE DONE

"There is great opportunity for associations and particularly engineering societies to conduct a campaign of education," the bulletin concludes. "Today a university in Tennessee, co-operating with the Bureau of Mines, is having men visit power plants in Tennessee to bring about the savings in coal consumption which come from consideration of the firemen's methods. Similar efforts should be made elsewhere

"The Executive Committee of the Chamber of Commerce of the United States is forming a special committee to act as a clearing house of efforts to reduce the unnecessary consumption of coal. Business men are urged to form local committees to co-operate with this committee. Particularly are association members urged to form such co-operating committees. These committees should be organized without delay. There is real work to be done."

* * *

East Liverpool—The "Ceramic City"

Just as Detroit brings visions of an endless procession of automobiles to one's mind; just as one thinks of steel when Youngstown and Pittsburg are mentioned, so does one think of pottery and chinaware in connection with East Liverpool, says the Youngstown (Ohio) "Vindicator."

East Liverpool is not only the greatest pottery making center in America, but it is also the greatest pottery making community in the whole wide world. And if the hustling manufacturers and kiln owners of East Liverpool have their way about it (and it would not be strange if they did), East Liverpool will continue to occupy this proud first place in its industrial world.

When the bullet of the crazed student found home in the body of the Austrian heir to a kingdom, in the far-away Balkans just about three years ago, it smashed the pottery business of all Europe to bits, in addition to starting the world war.

East Liverpool has profited vastly by reason of this war. Even if peace were to come to the world tomorrow, East Liverpool pottery makers stand prepared to give the European importers of tableware a hard fight for supremacy on this peaceful continent.

ENORMOUS KILN CAPACITY

There are about 575 pottery kilns in the whole United States. Of this total, 268 are in the East Liverpool district. And the ownership and operation of these 268 kilns are divided among nineteen firms that operate thirty separate plants.

East Liverpool district's payroll is sufficient to keep half a dozen national banks going; there are 15,000 names on that payroll (including the employes of all the plants in the district) and of this number, fully one-half are highly skilled workers; men who frequently must serve an apprenticeship of five years before they are rated as proficient in their trade.

There seems to be a popular idea that the pottery industry of this country has centered at East Liverpool because all the clays for the manufacture of the product are found there. Such, however, is not the case. There is only a small part of the raw product produced in East Liverpool, or anywhere near it. The industry is centered there because the skilled labor market of the pottery trade exists there. And by the way, the skilled pottery workers are of vastly more importance to the manufacturers than the raw material which is brought in from distant states and from foreign countries.

The first pottery established in East Liverpool was owned by Benjamin Harker and James Bennett, two wandering artisans who had migrated to America from England. This was in 1839. The Harker & Bennett plant was a rude one-kiln affair and their product, while crude, was very well made. Maybe there were no gold-leaf ornaments on the utensils these pioneers turned out, but the product was so good that it was used in middle western households in preference to the European product.

"East Liverpool district," as it is known in the trade, includes great plants in East Liverpool proper, in Newell, and Chester, two West Virginia towns across the river from East Liverpool, and Sebring. Sebring has no particular quarrel with East Liverpool but is becoming so large now that it is a "district" all in itself, and East Liverpool need not encroach upon Sebring's boundaries to claim great figures or to swell its industrial statistics.

Over in Newell, on the West Virginia side, stands the largest pottery in America. It is the Homer Laughlin China Co., and every day a freight train composed of cars loaded with this pottery's product draws out of the yards bound for distant places.

The pottery workers are organized and have built a club house that cost $17,000.

⁂

New Building Code in Michigan

A new housing law takes effect August 1 and applies to all cities of 10,000 population or over, which is expected to eliminate to a large extent fire hazards which do now exist in many crowded resident sections of the large centers. The code makes unlawful the construction of any dwelling exceeding three stories unless built of fire resistive material. Ample arrangement of commodious fire escapes is required on all multiple dwelling apartments.

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.

400 Chestnut Street
Philadelphia, Pa.

The "B-G" Portable Belt Conveyor

Eliminates Your Worst Labor Problem

With this light, practical conveyor you can reduce your handling charges at many points. The conveyor can be moved easily on its own trucks or on an overhead track, in a shed or in the open.

It handles **coal, clay** and **brick.** It will operate level or on an incline. It eliminates the wheel barrow and all rehandling and thereby **cuts the labor costs in two.**

Driven by electric motor within the frame. Eighteen-inch belt. Made in 12, 15, 20 and 25 foot standard lengths or in special lengths to suit conditions.

In writing for price, state length of conveyor required and voltage, phase, and cycle of your current.

Barber-Greene Company

Aurora, Illinois

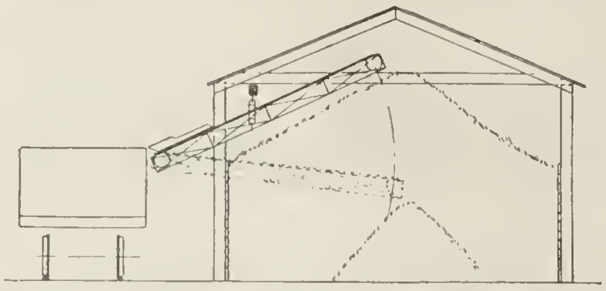
532 Acklin Ave.,
Toledo, Ohio.

Maurice J. Watson Co.,
Newtonville, Mass.

Lucke Sales & Engineering Co.,
Minneapolis, Minn.

Machinery Rental & Sales Co.,
Kansas City, Mo.

Mussens Limited.
Montreal, Canada.



For inside use in any type of shed piling coal or reclaiming clay.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

American Ring Pulverizer

It is made in six sizes, and has distinctive features which serve to produce more tonnage with less operating cost per finished ton. The American Pulverizer Company, East St. Louis, Ill., have received many testimonials bearing out their claims and the one printed below covers the ground thoroly.

"Before deciding upon the kind of clay grinding machinery to install in our factory, we made a very careful examination of the different makes of dry pans and hammer pulverizers. After watching them while in actual use in several different factories, and after hearing the reports of those using the various makes, we were very much in favor of your American ring pulverizer, and installed same in Spring of 1913.

"Our clays and shales are quite difficult to grind. Some stratas are soft and some extremely hard. The dry pan could not handle all these different stratas satisfactorily, but your ring pulverizer No. 48 is surely a hummer to turn out the ground clay. In the winter our clay is usually frozen hard and nothing but your machine will handle it with sufficient rapidity to keep a plant the size of ours going.

"We consider ourselves very fortunate, indeed, in having decided upon your machine. It does the work of two or three ordinary dry pans, and considering the tonnage obtained, is as cheap, if not cheaper, to operate and maintain."

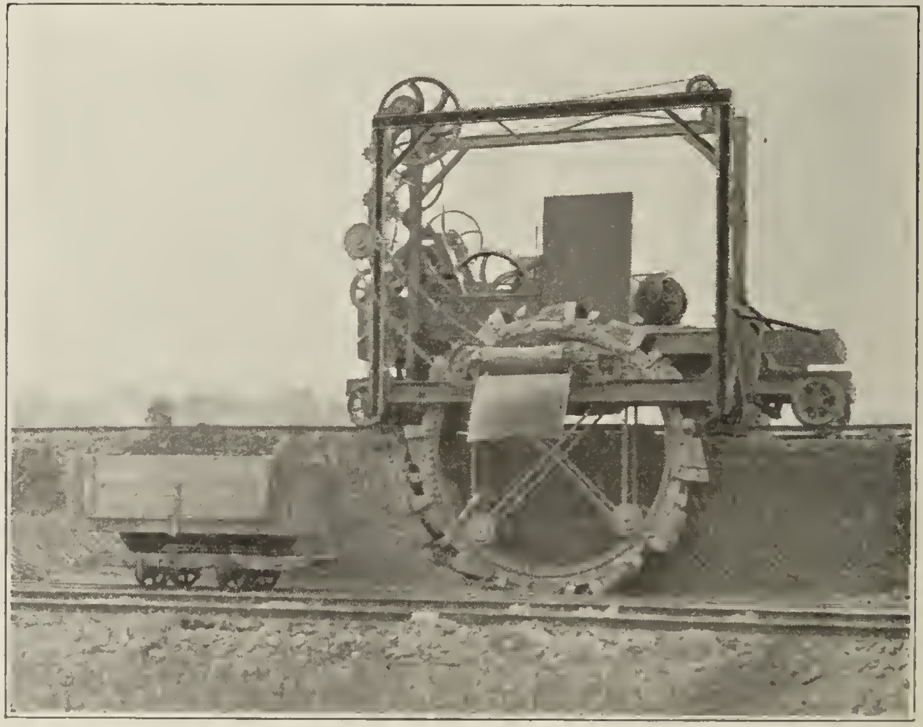
* * *

Reduce Cost of Winning the Clay

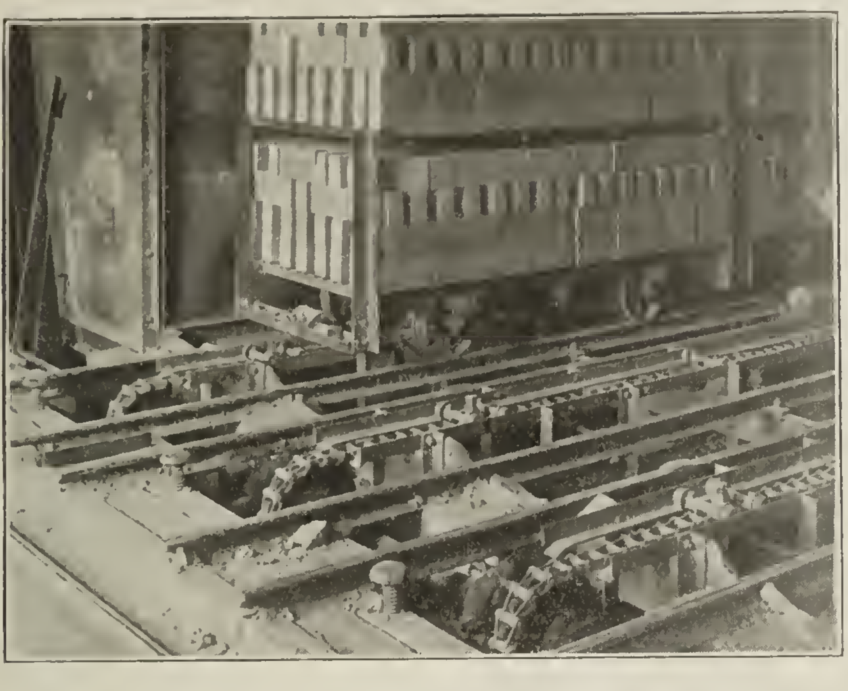
The progressive brick and tile manufacturer is looking for some method of securing his raw material at lower cost, and those who have tried it believe that the Buckeye Clay Digger has solved the problem.

This machine may be purchased at a price within the reach of all, and is adaptable to varying conditions. It is simple in construction, easily handled and inexpensive in operation.

The merits and advantages of the Buckeye do not rest entirely upon its ability to save costs in the clay pit, because it accomplishes another important saving in that it thoroly



Buckeye Digger Operated by Electricity.



Showing the Chain Arrangement by Which the Cars of Ware are Automatically Spaced and Moved Forward.

cuts up and mixes the clay, so that far less preparation is required than would otherwise be necessary.

Among the successful users of the Buckeye Digger is the Claycraft Brick Company, Groveport, Ohio, who write as follows regarding it:

"This digger loads the clay in 1½ yard clay cars. It requires a man to shift these cars back and forward under the belt conveyor. This man looks after the machinery also, and we pay him 22½ cents per hour. The digger cuts 7 ft. deep and 18 inches wide, and with the conveying and all machinery it only pulls 55 Amp. on 220 V. D. C. current, making the actual cost of running and operating the digger very small. We generate our own current at about ¾ cents per K. W.

"We have loaded 160 cars or 240 yards in 10 hours. The digger will actually dig ½ more cars if you had a better method of getting the loaded cars away from the digger and the empty ones back. The lay of our land prevents us from doing this as it should be done. In the pit it requires a man to gather up any clay that falls to the side, which is very small. We pay him 20 cents per hour.

"The up-keep of this machine is small. The only thing wearing out to any extent being the spades of the cutters that shear the clay off, and the side cutters. Our blacksmith relays these with steel again. It takes only two sets of cutters to run the season."

The Buckeye Traction Ditcher Company, Findlay, Ohio, manufacture the digger.

* * *

The "Proctor" Dryer

There are numerous claims of superiority for the "Proctor" dryer, some of which may be briefly noted as follows:

It cuts the drying time from 50 to 90 per cent. over other systems—this percentage depending upon the product and the nature of the raw material. This means that if your clay by your present system requires 100 hours to dry properly, the Philadelphia Company guarantees that their system will do it in from 10 to 50 hours.

Another point brought out is that fewer cars are required—the number used being cut down from 50 to 70 per cent. compared with other systems, which, of course, means a considerable saving in equipment.

They also claim a cutting down of the percentage of waste to a point that is practically negligible. Practically all the ware that enters the dryer mechanically sound comes out of it in the same condition, except that it is thoroly dry.

These wonderful results are secured by a combination of all the mechanical arrangements necessary to surround the ware with the very best possible conditions conducive to uniform and rapid drying. All sides of every piece of ware are given the same treatment—the arrangement of the air circulation taking care of this.

The dryer is made up of a number of compartments in each of which the correct temperature is maintained absolutely uniform, and in which the air contains just the right amount

Where Are You Going to Get MEN?

Last year you were in constant competition with munition factories, harvesting and countless other industries that attracted your workers—causing you unknown losses due to your inability to get along without MEN.

This year a new competitor is asking for 2,000,000 men under arms, and countless thousands in other Government work—UNCLE SAM wants MEN—and you don't get them.

The Automatic Electric Elevating Platform Truck presents to you—your way out, and you had best grab it *now*.

It actually saves MEN. It unloads kilns quicker, better and cheaper.

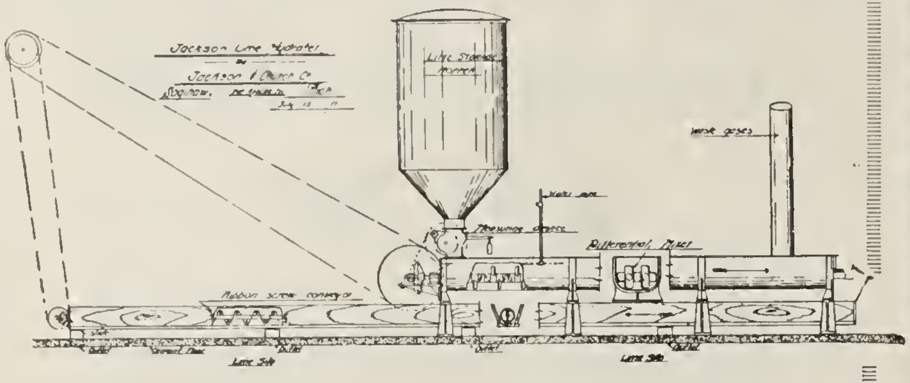
It hauls more then a man, it goes faster than a man, it goes from kiln to pile oftener than a man, it goes to work *every* morning at 6:30—always.

It saves MEN.

The Automatic Transportation Co.
2933-2965 Main St., Buffalo, N. Y.

Pioneer manufacturers of Electric Storage Battery Trucks, and the only Truck Manufacturers awarded Gold Medal at San Francisco Exposition

Improved Lime Hydrator

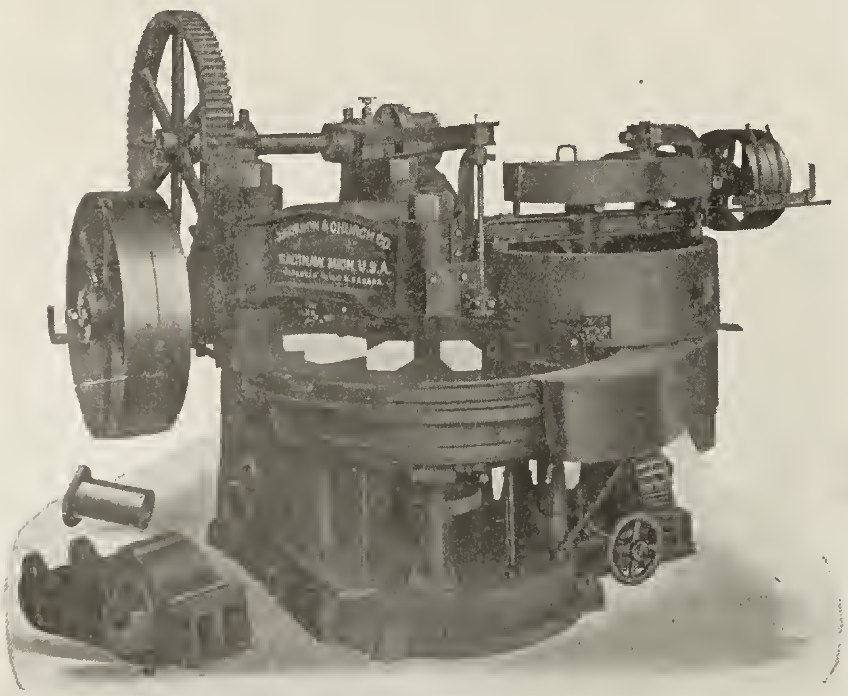


In the manufacture of Sand Lime Brick it is best to hydrate the lime on the premises. Our hydrator will do this better and cheaper than any machine in use and is not expensive to install. You can get full information by writing to

Jackson & Church Co.
SAGINAW, MICH.

Builders of a Complete Line of

Sand Lime Brick Machinery, Boilers, Tanks, Structural Iron, Castings, etc.



The Marion Shovel is Sold Under a Broad Guarantee.

of moisture for that particular stage of the drying. Each compartment has its own circulation of air which is independent of the air circulation in the other compartments.

Then there is a mechanical device for moving the cars thru the various compartments. Rapid drying is secured because with the absolute control of all conditions surrounding the ware the Philadelphia Textile Machinery Company is able to use a higher temperature and a greater movement of air than is possible in a system of drying in which there is a fluctuation or variation in these elements. More complete details can be obtained from the Philadelphia Textile Machinery Company, whose address is Sixth Street and Tabor Road, Philadelphia, Pa.

⁂

A Comprehensive Guarantee

The Marion Steam Shovel Company, Marion, Ohio, builds its machinery on honor, and sells it under a broad guarantee. They make seven regular models and many special models of steam shovels, and other machinery for the handling of earth, rock, ore and other heavy material. For the protection of the purchaser they give the following guarantee in their catalog:

"We guarantee the materials and workmanship of the within described machinery to be first-class. If, on trial, any part should prove defective we agree to furnish free of charge a duplicate to take its place, accidents, careless handling, wear and tear excepted.

"These machines will handle more material at a less expense and with fewer repairs than any machines of their respective sizes now manufactured.

"We will allow any responsible party to place any of the within described machinery on his work subject to a liberal trial.

"If the machinery proves otherwise than as represented by us, it can be returned at our expense, and any money paid by purchaser will be cheerfully refunded."

The Marion Company protects itself by ungrudging care at every stage of the process of manufacture. They are not content to buy parts in the market, but make everything in their own foundries and factories. In this way, having every detail of the machinery under their immediate supervision and control, from the crude material to the finished part, they are able to assure themselves of the perfection of every detail and the utmost uniformity in size, form and quality.

GOOD IDEAS
don't cost you anything if you get them from the ads you see in "Brick and Clay Record." Read them.

American Clay Machinery Company..........625, 627
Armstrong Mfg. Co..........612

Baird Mach. & Mfg. Co....607
Ball Engine Co..........565
Beighlee Electric Co..........610
Bell Locomotive Works....604
Black Diamond..........620
Bonnot Co..........556
Bristol Co..........609
Broderick & Bascom..........601
Brown Instrument Co..........615

Canton Grate Co..........611
Celite Products Co..........600
Ceramic Supply & Cons....604
Chambers Bros. Co..........559
Chase Fdry. & Mfg. Co....633
Clarage Fan Co..........598
Cleveland Alloys Co..........629
Classified Ads..........640, 642
Cling-Surface Co..........623
Cork Insert Co..........598
Crescent Belt Fastener......599
Crimora Manganese Co....599
Cyclone Grate-Bar Co......608

Didier-March Co..........636

Eagle Iron Works..........600
Eastern Mchy. Co..........639
Elwell-Parker Electric..........603
Englehard, Chas..........568
Exner, J. E..........613

Fate Co..........643

Gandy Belting Co..........621
Garnet Company..........629
General Store..........629
Goodrich Co..........598
Goodyear Tire & Rubber Co..........563

Hardinge Bros., Inc..........599
Harris Bros. Co..........642
Hendrick Mfg. Co..........633
Hercules Powder Co..........564
Hettrick Mfg. Co..........605
Homestead Valve Mfg. Co..........602, 629

Illinois Boiler Cleaning Compound Co..........629
International Clay Machinery Co..........560, 561

Jackson & Church Co......618
Jenkins Bros..........607

K-B Pulverizer Co..........601
Keystone Driller Co..........614

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other Tuesday by

Kenfield-Leach Company
445 Plymouth Court Chicago

Chicago, September 25, 1917
Vol. 51 No. 7

Leading Articles in This Issue

Huge Face Brick Promotion Fund Planned for Three-Year Campaign 572
From Plans to Plant in Less Than Four Months 575
What Does It Cost?..........579
Making the Bucket Elevator Trouble-Proof 584
How Do You Handle Your Lease Account 588
The General Manager Attends Another Rate Hearing..........591
Rate Fundamentals and Tariff Interpretations 593

* * *

The Editor's Corner..........570

* * *

Special Departments

Letter Box 602
Machinery and Equipment..........623
Pottery Notes 614
Questions and Answers..........600
The Superintendent 597
Wake of the News..........604

Lakewood Eng. Co..........622
Link-Belt Company..........566

Main Belting Co..........557
Manufacturers Eq. Co......558
Marion M. Fd. & S. Co..600
Marion Steam Shovel Co..609
Marsh & Co., Geo. C..........641
Mathews Gravity Carrier..635
Morgan Co., F. W..........598

Ohio Filler & Shield Co....602
Ohio Galv. & Mfg. Co......634
Orenstein-Arthur Koppel Co..........637
Osgood Co..........633
Owens Continuous Tunnel Kiln Co..........629

Philadelphia Textile Machinery Co......Front Cover
Potts & Co..........598
Price Electric Co..........606

Quaker City Rubber Co....637

Roessler & Hasslacher......606
Rollin Chemical Co..........605

Sander Instrument Co......601
Sanderson-Cyclone Drill....599
Sauerman Bros..........598
Sawyer Belting Co..........635
Scandinavia Belting Co....612
Schofield-Burkett Cons......636
Sero Specialty Co..........601
Service Motor Truck Co..562
Smith Co., Claude..........555
Standard Dry Kiln Co..........610
Sturtevant Mill Co..........644
Stupakoff Laboratories......600

Taylor Instrument Companies..........613
Thew Auto Shovel Co......619
Thwing Instrument Co......608
Trautwein Dryer & Engineering Co..........555

Union Chain & Mfg. Co....598

Victor Balata & Textile Belting Co..........633

Watt Mining Car Wheel....603
Webner, F. E..........629
Weller Mfg. Co..........554
Westinghouse El. & Mfg.
Wood & Co., R. D..........617

Youngstown Steel Car......611
Co..........634

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

Convince the Road Engineers by an Ocular Demonstration

THE TIME of the year is at hand when it has been the custom for paving brick manufacturers to meet in executive session and to determine the day and place of the National Paving Brick Manufacturers' Association annual meeting.

Of all the meetings of the year at which clay products manufacturers gather, the national convention of the paving brickmakers is one that stands out in size and quality of attendance, as well as the attractions of its program. For a number of years past it has been the custom to meet in the early fall at some point where brick road construction is under way so that it might afford inspection of the work not only by the brick manufacturers, but what has been far more important, by highway engineers, upon whom rests the responsibility of writing dependable road specifications.

We look back with not a little pleasure to these gatherings. Reminiscences are in most cases profitable. If not profitable, they are at least pleasant. In the case of paving brick conventions they are both profitable and pleasant. We remember with a great deal of satisfaction the successful meeting of the Association at Cleveland in 1913, at Buffalo in 1914, at Dayton in 1915, and Terre Haute and Paris in 1916. We wonder where 1917 will see paving brickmakers and their friends gathered.

But regardless of when and where the Association meets, we are looking forward to that part of the program which calls for inspection tours of brick streets and roads, which always make an interesting sight whether they are in the making, have just been completed, or are a quarter century old. This feature of the annual meeting has, we believe, been most entertaining and most profitable—profitable not only to the highway engineer in the new knowledge gained, but to the paving brick manufacturer in the dissemination of facts brought home with force by a demonstration showing forth the merits of the brick road.

The plan that has been pursued with regard to getting the highway engineers to the convention at a minimum of cost to the organization has, we believe, been very commendable. Each member of the Association in past years has taken it upon himself to see that the engineers in his district are on the scene in due time, and this at his own expense. Many manufacturers have used the automobile to advantage in picking up the engineers in his territory, and then driving them to the convention. While "gas" may have passed the twenty cent mark, still we believe that it is a good investment, a statement which is backed up by the testimony of paving brick manufacturers that the annual convention coupled with the inspection tour has been highly productive of desirable results in the way of more specifications for brick roads.

At the National Business Men's War Conference of the Chamber of Commerce of the United States at Atlantic City, N. J., September 18-21, a national propaganda looking toward the improvement of America's highways was given emphatic endorsement. The adoption of a resolution in this connection was productive of applause that surpassed any registered approval thruout the entire three days of notable addresses and discussions. The resolution reads as follows:

"PUBLIC ROADS

"WHEREAS, It is essential that all the transportation facilities of the nation should be brought to the highest state of efficiency in order that food stuffs may be moved most economically from the farm to the market, that manufactured products be moved at the lowest cost from the factory to the consumer, and

"WHEREAS, The Public Highways offer a good, prompt and economical means to supplement transportation by rail and water, therefore

"BE IT RESOLVED, That the prompt improvement of our Public Highways is important and should be forwarded in every proper way."

It would seem to us in view of the above that nothing could be more timely this fall than a large and enthusiastic gathering of paving brick manufacturers and engineers, meeting for the leading purpose of getting more facts about brick road construction and of putting these facts to good use by creating more road specifications calling for vitrified clay paving brick.

⁂

A Big, Practical Promotion Plan

FOR YEARS manufacturers of face, as well as common building brick, have realized the great need for organized promotion of the best of all building materials, and as a result a number of efforts have been made to raise an adequate fund to be spent in improving the market for brick. The Building Brick Association, of which William Hanley was president, is a notable example of a worthy effort in this direction, and there have been others of less prominence, but nevertheless of a highly commendable nature. In all of these attempts to put brick on the high plane in the public eye, to which it is justly entitled, there seems to have been something lacking either in the plan or in its execution.

Believing that the weakness lay in the plan more than anything else, the American Face Brick Association, thru its executive committee, has formulated a program for face brick promotion that is without a doubt the best that has ever been advanced. This plan, which is detailed in the following pages, has recognized as the very foundation of the structure the necessity of every one pulling, and pulling together. As a result the $300,000 promotion fund will not be possible unless about ninety per cent. of the manufacturers of face brick east of the Rockies sign the enforceable contract which has been prepared. When it is assured that all manufacturers are going to work together in making the plan a success, by the attachment of their signatures to the contract, this legal and binding form will make it impossible for a few to endanger the success of the program by failure to support.

The fact that nearly all manufacturers must sign in order for the plan to proceed also establishes an equitable distribution of the cost that will give very few manufacturers any advantage in the matter of price by staying out. This is something concerning which very little has been said in past promotion plans but which is highly important.

There are other details of the plan which are better described beginning on page 572, and which are most worthy of careful study. The point which we wish to make here is that of all the plans which have been presented for face brick promotion, the one in question is most deserving of unqualified support on the part of manufacturers.

It has been said by some that this is not the time to launch such a large and comprehensive campaign for publicity when the market is in its present condition. We believe that this is all the more reason why the program should be put into effect without delay.

Furthermore, even if the manufacturers were ready on this day to proceed, the movement could not be gotten well under way for at least a year, and possibly two years. The face brick business is depressed at this writing, but this condition cannot long endure. There must be a change and every indication points to a change for the better. Therefore, by proceeding with the plan outlined at once, manufacturers will be prepared to take every advantage of a rising market.

* * *

The Steel Price Cut from the Clay Products Manufacturers' Standpoint

THE NEWS that President Wilson had approved a scale of steel quotations cutting former prices in half yesterday came as an interesting development to clay products manufacturers, but what will the effect be on building operations and upon the market for clay products? That is the question in the mind of nearly every clayworker, and it might be well to examine some facts in this connecton with a view toward throwing some light, if possible, upon the future.

Building is not as active as at the same period last year, a fact which is forcefully conveyed in a resume of building operations for August, contained in another part of the magazine. The slump may in part be attributed to so called "high prices," but we know from personal investigation that it is not entirely due to this cause—that is, so far as the consumer is concerned. A goodly portion of building operations requiring clay products depend upon the ability of the builder to borrow as much as sixty per cent. of the total cost of the operation and of the land in order that the job may progress to completion. A large number of banks have cut this percentage down to forty, but many prospective builders report that they cannot get loans even under this condition.

Bankers are conservative men. They are discounting future possibilties. They are afraid that if they loan sixty per cent. of the cost of a building and the land, and the job is pushed to completion, using materials at present prices, that perhaps in a few years prices may recede and the building then will not be as valuable as it is now, and therefore the bankers' security will not be as good as it was. Now, the banker does not know that prices will fall, but he feels that it is better for him to err on the side of safety than to take any chance, so he has tightened up in the matter of building loans which naturally has affected the amount of construction under way or being planned.

Steel has been one of the bulwarks against building progress because of its high price and the extent to which it enters into construction. It may be that the fact that the price of this commodity has been reduced more than fifty per cent. in some cases will cause the bankers to "loosen up."

We sincerely trust that this will be so.

It is not so long since the government set prices upon coal the country over. This action, however, has not made coal more plentiful, in fact, it seems to have had the opposite effect, but the coal mine operators did not work as closely with the Federal Trade Commission as the steel men have, and it seems that this fact will make a vast difference in the attitude of the latter toward maintaining capacity, and even increasing it.

The mills can turn out a sufficient amount of fabricated metal to fill every legtimate need, and if this is done, it will certainly help in creating a greater activity in building circles.

The situation looks encouraging. There is every reason to believe that conditions will improve from now on.

HUGE FACE BRICK
PLANNED *for* 3

American Face Brick Association Adopts Contract Form for Membership, Which Fixes Assessment at Fifty Cents Per Thousand for the Support of the Association and Carrying Out of Publicity Plans—A Sum Which Will Assure the Collection of the Minimum Amount Necessary to Make a Worth-While Impression on the Building Public, and One Which Will Be Contributed to by Manufacturers in Proportion to Their Shipments.

THREE HUNDRED THOUSAND DOLLARS a year for three years for the promotion of face building brick! This is what the industry has been talking about for a long time, but until now no serious nor determined action, accompanied by a *practical plan,* had been taken to accomplish this highly desirable goal.

DIRECTORS MEET AND ADOPT PLAN

In answer to the widespread demand that something be started toward the raising of a large and sufficient fund to put face brick "on the map," as it were, in competition with other building materials having powerful and progressive backers, the executive committee of the American Face Brick Association, consisting of George A. Bass, president, Hydraulic-Press Brick Co.; S. C. Martin, president, Kittanning Brick & Fire Clay Co.; J. M. Adams, secretary and general manager, Ironclay Brick Co.; P. B. Belden, manager, Belden Brick Co.; J. H. Black, secretary-treasurer, Jewettville Brick Co., and Frank W. Butterworth, general manager, Western Brick Co., met on July 31 and reached the conclusion that the industry could profitably spend fifty cents per thousand for the promotion of face brick, *provided* the manufacturers who had in 1916 shipped a total of *six hundred million* face brick would support such a campaign for a period of *not less than three years.* As a result of this meeting, the secretary of the association, R. D. T. Hollowell, was instructed to draw up a contract form which would be in keeping with the ideas and suggestions discussed at the meeting.

This form was duly drawn and submitted to the board of directors which voted in favor of making the provisions of same the basis of assessment for the American Face Brick Association during the term in which the contracts are in force, provided the necessary support is received from the manufacturers to make the contracts effective. A copy of the contract follows:

ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT, made and entered into this ....day of...................., 191...., by and between THE AMERICAN FACE BRICK ASSOCIATION (hereinafter called ASSOCIATION), of Pittsburgh, Allegheny County, Pennsylvania, party of the first part, and .... (hereinafter called MEMBER OF ASSOCIATION), of ...., County of...................., and State of...................., party of the second part.

IN CONSIDERATION of the mutual covenants set forth, it is understood and agreed as follows, to wit:

1. Said Association shall exploit the use of Face Brick, use its best endeavors to create a market for, and extend the sale of the same, and faithfully carry out the purposes of the organization.

2. Member of the Association shall pay to the Association fifty (50c) cents for every thousand Face Brick shipped by said member during the term of thirty-six (36) months next following the date upon which this agreement takes effect, said payments to be made monthly on the twenty-fifth (25th) day of each month for all Face Brick shipped during the preceding calendar month, said payment, in no event, is to be less than ten ($10.00) dollars each and every month. The terms and conditions of this contract, or any default in payment, shall be enforced in law or equity by a duly authorized agent of the Association, who shall have the right to sue in the name of the Association.

3. A duly authorized representative of the Association shall have access to the books of said Member, for the purpose of ascertaining the correctness of the amounts paid, once every four months.

4. It is specially understood and agreed that this agreement shall be void and of no effect, except and upon condition that a like agreement be entered into by manufacturers of Face Brick, whose several output in the year 1916, made, sold and shipped, amounted, in the aggregate, to 600,000,000 of Face Brick. The written certificate of each manufacturer as to his output during 1916, shall be conclusive for all purposes under this agreement.

5. Said Association shall give written notice to each and every member sixty days prior to the date upon which the first payment hereunder becomes due and payable.

6. For all purposes under this agreement, the term Face Brick shall be construed to mean only those brick which are made, sold and shipped as Face Brick.

7. This agreement shall be binding upon the heirs, executors, successors and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have set their respective hands and seals the day and year first above written.

THE AMERICAN FACE BRICK ASSOCIATION (Seal)

By..

ATTEST: ....(Seal)

....

By..

THE MEN WHO WILL CONTROL THE EX-

J. M. ADAMS, The Ironclay Brick Co., Columbus, Ohio.

B. W. BALLOU, Kansas Buff Brick and Manufacturing Co., Buffville, Kan.

GEORGE A. BASS, Hydraulic-Press Brick Co., St. Louis, Mo.

H. R. BEEGLE, Beaver Clay Manufacturing Co., New Galilee, Pa.

P. B. BELDEN, The Belden Brick Co., Canton, Ohio.

J. H. BLACK, Jewettville Brick Co., Buffalo, N. Y.

F. W. BUTTERWORTH, Western Brick Co., Danville, Ill.

T. P. CUTHBERT, Fallston Fire Clay Co., Pittsburgh, Pa.

PROMOTION FUND YEAR CAMPAIGN

* * *

The Contract Is Conditional, Inasmuch as the Signatures of Shippers of at Least Six Hundred Million Face Brick Must Be Obtained Before the Campaign Will Be Undertaken. This Provides Assurance to Every Face Brick Manufacturer That the Burden Will Be Equitably and Fairly Distributed. In Order to Become Operative, the Plan Requires the Support of Between Eighty and Ninety Per Cent. of All Manufacturers East of the Rockies.

* * *

Believing that a few words concerning the main features of this form would be of interest, attention is called to the provision which places each signer upon an exactly equitable basis—that is the manufacturers, regardless of size, are to pay precisely in proportion to their shipments. The assessment, consisting of fifty cents per thousand, was agreed upon for two reasons; first to assure the collection of the minimum amount of money necessary to make a worthwhile impression upon the building public, and second, to insure the inclusion in every manufacturer's costs of the same amount of expense for promotional work. Figured on the basis of 1916 production, this minimum will bring in approximately $300,000 which is not a large amount for the vast amount of work to be done.

PENDITURE OF THE $300,000 FUND

J. P. B. FISKE, Ridgway Brick Co., Ridgway, Pa.

LEON GOODMAN, Des Moines Clay Co., Des Moines, Iowa.

W. H. HOAGLAND, Claycraft Brick Co., Columbus, Ohio.

S. C. MARTIN, Kittanning Brick and Fire Clay Co., Pittsburgh, Pa.

J. W. MOULDING, Thomas Moulding Brick Co., Chicago, Ill.

CHARLES C. STRATTON, Alumina Shale Brick Co., Bradford, Pa.

HAY WALKER, Hay Walker Brick Co., Pittsburg, Pa.

It has been said that the contract is a conditional one. Particular attention is called to this feature. It will become effective only in the event it is supported by manufacturers who made a combined shipment last year amounting to six hundred million face brick. Exact government figures as to the number of face brick produced in 1916 are not yet available but the output in 1915 was approximately eight hundred and fifty-five million. Omitting from the present consideration the output of the far western states, it can be readily figured that if the required minimum of six hundred million brick can be signed up to the same contract, between eighty and ninety per cent. of the entire production east of the Rocky Mountains must necessarily participate. Therefore, any signer of the contract can rest assured that if his contract ever becomes effective, he will be on an exact level with practically every other manufacturer east of the Rocky Mountains, insofar as this particular expense is concerned. For this reason, altho the minimum set is extremely high, this seeming disadvantage is really a distinct advantage to the plan in that any manufacturer can safely sign a contract without waiting to see what his immediate competitor is going to do because if more than a very few of the manufacturers fail to co-operate, the whole movement is going to fail and the contracts which have been signed up will have to be destroyed.

The signer of a contract will automatically become a member of the American Face Brick Association at the time his contract becomes effective. Fifty cents per thousand represents the exact figure, no more and no less, which will be assessed for the support of this organization and its activities, of which the promotion of demand will be the principal one. Sixty days' written notice is required before the first payment becomes due. By this safeguard it will be possible for every company to protect itself in its costs for any payments which may be made in the future.

The contract conforms with every legal requirement and is enforceable. Entering into an enforceable contract is desirable from every standpoint; from that of the member it means protection and good faith on the part of every other signer.

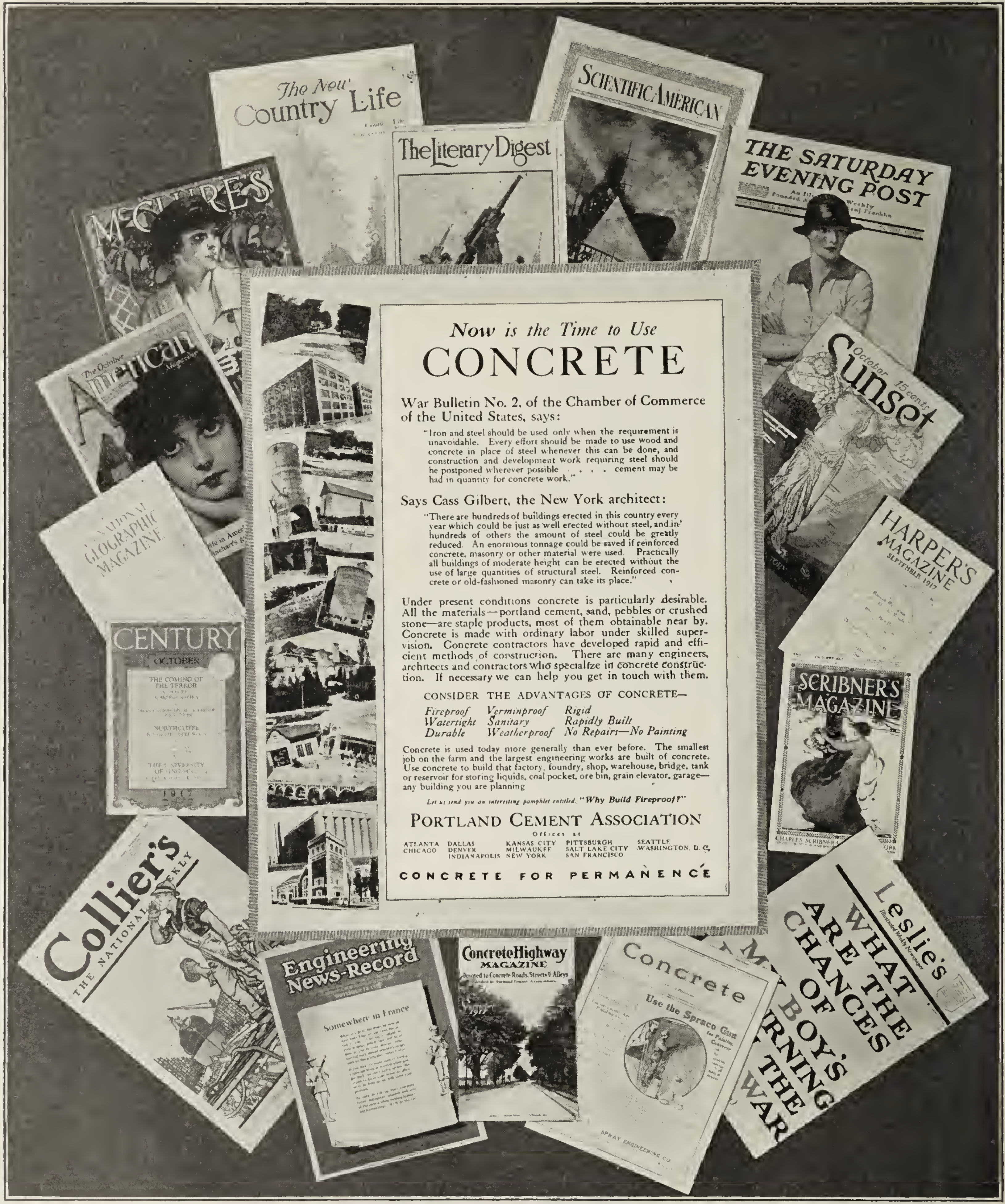
PROMOTION CAMPAIGN WILL STRENGTHEN DEMAND

There is little doubt that face brick manufacturers are today feeling the pinch of decreased demand. The plan outlined above presents an opportunity to increase demand so that supply will not fully catch up for ten years.

The year 1917 will probably be one of disappointment for face brick manufacturers. The outlook in January was very encouraging. It appeared quite likely the year's production would be sold by July 1. Contrast the optimistic feeling which prevailed at that time with the actual conditions of today. By discounting some of the unusual costs and uncertain conditions, manufacturers generally will be able to finish up the year without great loss, but, if the demand for face brick had been seventy-five per cent of normal during the last six months of 1917 instead of probably fifty per cent. or even less, as now appears likely, the entire industry might have shown a little profit.

What is the situation with materials used competitively for facing purposes? For the first six months of 1917, the cement industry showed a gain of ten per cent. over the corresponding period of the previous year. It has been authoritatively stated that for the last several years the demand for cement has been increasing at an annual average of approximately ten per cent. Cement manufacturers attribute this remarkable and apparently regular increase in demand to the intelligent exploitation of the many uses for

(*Continued on Page* 617.)



Now is the Time to Use

CONCRETE

War Bulletin No. 2, of the Chamber of Commerce of the United States, says:

"Iron and steel should be used only when the requirement is unavoidable. Every effort should be made to use wood and concrete in place of steel whenever this can be done, and construction and development work requiring steel should be postponed wherever possible . . . . cement may be had in quantity for concrete work."

Says Cass Gilbert, the New York architect:

"There are hundreds of buildings erected in this country every year which could be just as well erected without steel, and in hundreds of others the amount of steel could be greatly reduced. An enormous tonnage could be saved if reinforced concrete, masonry or other material were used. Practically all buildings of moderate height can be erected without the use of large quantities of structural steel. Reinforced concrete or old-fashioned masonry can take its place."

Under present conditions concrete is particularly desirable. All the materials—portland cement, sand, pebbles or crushed stone—are staple products, most of them obtainable near by. Concrete is made with ordinary labor under skilled supervision. Concrete contractors have developed rapid and efficient methods of construction. There are many engineers, architects and contractors who specialize in concrete construction. If necessary we can help you get in touch with them.

CONSIDER THE ADVANTAGES OF CONCRETE—

Fireproof *Verminproof* *Rigid*
Watertight *Sanitary* *Rapidly Built*
Durable *Weatherproof* *No Repairs—No Painting*

Concrete is used today more generally than ever before. The smallest job on the farm and the largest engineering works are built of concrete. Use concrete to build that factory, foundry, shop, warehouse, bridge, tank or reservoir for storing liquids, coal pocket, ore bin, grain elevator, garage—any building you are planning

Let us send you an interesting pamphlet entitled, **"Why Build Fireproof?"**

PORTLAND CEMENT ASSOCIATION

Offices at

ATLANTA DALLAS KANSAS CITY PITTSBURGH SEATTLE
CHICAGO DENVER MILWAUKEE SALT LAKE CITY WASHINGTON, D. C.
INDIANAPOLIS NEW YORK SAN FRANCISCO

CONCRETE FOR PERMANENCE

THE POLICY THAT MADE THE CHAMBER OF COMMERCE FORGET BURNED CLAY

The Above Is a Reproduction of a Full Page Advertisement Carried by the Portland Cement Association in Twenty-Two Nationally Distributed Magazines, Heralding to the Country the Message that Concrete Had Received the Official Sanction of the Government as a Fit Substitute for Steel. Brick and All Other Burned Clay Products Were Left Out of that Official Bulletin; No, Not Because There Was Any Discrimination. The Committee of the Chamber of Commerce of the United States that Prepared the Bulletin Merely Forgot to Include These Materials, Because They Had Been Taught by the Stupendous Advertising Campaigns of Wood and Concrete to Think in Terms of Wood and Concrete Whenever They Thought of Building Materials. The Result Is That Their Message, Without Mention of Brick, Tile or Terra Cotta, Is Being Delivered to Readers of Magazines Having a Total Circulation of 7,523,109. The Dawn Is Breaking and in the Huge Campaign Getting Under Way for the Promotion of Face Brick Is Seen a Movement Which Will Place that Burned Clay Material on a Par With Those Which, by Virtue of Prolonged Advertising, Have Gained a Great Lead.

Approximately 40,000 Yards of Material Were Excavated Before This Huge Plant of the American Refractories Co., Covering Seven Acres, Was Completed

From PLANS *to* PLANT *in less than* FOUR MONTHS

A Feat Accomplished in Constructing America's Most Modern Brickmaking Plant Described Here in Detail

ON CURTIS BAY, just across from Fort McHenry, which the British bombarded on September 13, 1814, and which inspired Francis Scott Key to write "The Star Spangled Banner," stands what is without question the most modern brick plant, not only in the refractories field, but in the whole clayworking industry. It is known as the Baltimore plant of the American Refractories Co., and was built for the manufacture of magnesite brick, having a capacity of 25,000 brick per day.

The main reason for locating the factory at Baltimore may be found in the same cause which led Charles M. Schwab, of the Bethlehem Steel Co., to establish a new gigantic industrial institution at one of the best manufacturing and distributing points on the Atlantic Coast. Baltimore is near to the coal fields; a low freight rate to and from the city by rail prevails; the cost of power is reasonable, and a deep water channel permits the largest ships to enter port day or night.

In addition to these advantages, labor does not seem to be more difficult to obtain in this city than in any other Atlantic Coast port, perhaps somewhat easier. The city has enjoyed a $125,000,000 industrial expansion in two years and this alone is leading many captains of industry to turn their face toward this busy center.

When the war is over it will be a very simple matter for the American Refractories Co. to ship magnesite from its deposits in Austria to the Baltimore plant, where the brick can be made and shipped to consuming centers without any lost motion or retracing of steps. It will be a very simple operation, this journey of raw material from its resting place on the European continent to metallurgical establishments in industrial America. The magnesite can be mined and then calcined at its native location, and from there shipped to a coast point to be loaded in bottoms destined for America. Upon its arrival in the "Land of the Free and the Home of the Brave," it will stop long enough on the Atlantic Coast to change form and then it will continue its journey on to the great mills and smelters where it will be used in the shape of brick.

The site on which the plant is located consists of thirty acres of land, fifteen of which are inside of a high board fence. The plant itself covers about seven acres.

SPEED RECORD SET FOR CONSTRUCTION

On the first of March of this year the scene at the plant site was that pictured in one of the accompanying illustrations. The land had been cleared preparatory to breaking ground. Other than this nothing had been started. On the twenty-third of June the plant was producing magnesite brick—exactly 115 days later. This feat

An Interior View of the Machine Room, Showing a Number of Storage Tracks for Dryer Cars in the Foreground

hung up a record for factory construction in Baltimore. and undoubtedly is the fastest time in which a clayworking plant has been constructed. As many as 450 men were employed in the erection of the buildings. One has to see the plant in order to appreciate just what this record means, but as this is hardly possible for the majority of our readers, it might be said that it was necessary to excavate 40,000 yards of material before the plant was completed. 30,000 in connection with the buildings and 10,000 on two railroad sites.

There are three plant buildings consisting of steel skeletons closed in with Pennsylvania red slate brick walls and topped by steel roofs. These three buildings are jointed together. one being a raw materials storage, measuring 60x200 feet; a molding building 80x200 feet, and a dryer building. In addition to these there is a general office building containing a private office for the plant superintendent, a time room and space for the office force, while adjacent to this structure is a garage with accommodations for two cars. A very good view of the office building and garage are shown in another of the accompanying illustrations.

FACTORY DISPATCH SYSTEM

A railroad switch-track runs directly into the raw materials storage building—the structure has a capacity of from five to seven thousand tons of material. Below the elevated track is the crusher room where there are three crushers which are fed from the floor level of the storage bins. From the crushers, the material is elevated to the screen room and from there distributed by the screw conveyors. The screens are of a new mechanical type which has proved very successful. The bins aforementioned are of steel construction.

The molding building contains underdriven wet-pans, two presses and other equipment, as well as tables upon which shapes are molded.

The dryer building contains a mechanically operated steam-heated dryer. There are a number of storage tracks for dryer cars at right angles to this dryer which are visible in the foreground of the second of the accompanying pictures. This building also contains the lavatory and locker rooms, which are very commendable features of the plant The men who are handling the raw material all day usually change their clothing upon arriving at work in the morning, placing it in the well ventilated steel lockers. Every man who really needs to have a locker has been assigned one. Then, when he changes his clothing at the close of day, he is at liberty to take a bath, for which purpose a number of showers were installed, furnishing both hot and cold water. Cleanliness is the dominant characteristic of this part of the plant's equipment. It is a feature that helps the company to keep its men and from that standpoint is a very profitable investment.

There is a small building adjacent to the larger structures which contains a machine shop in which is found a lathe, shaper, grinder, radial drill, and hack saw. There is a blacksmith shop containing a forge, push drill, and grinder, and then there is a store room for supplies, tools, etc., as well as a carpenter shop containing woodworking equipment. The stock shed for the finished product of the plant is made of all steel construction.

EIGHT KILNS IN BATTERY

In the kiln yard there are eight thirty-two-foot round down-draft kilns of the standard refractory type, each one having an individual radial brick stack with a damper on top.

A View of the Plant on the First of March, Exactly 115 Days Before the Manufacture of Magnesite Brick Was Commenced. Other Than Having the Land Cleared Preparatory to Breaking Ground, Nothing Had Been Done

There are two three hundred horse power upright boilers which supply steam for drying and these have no fires underneath them but steam is generated by means of the waste heat from the kilns.

The machinery in the plant is entirely electrically driven, there being both silent chain and belt drives. The belts, machinery, and gears are well protected by safety screens.

There is a large switchboard at the plant in a separate room which consists of five panels. There is a graphic recording meter on the light and power circuits showing loads for every minute of the twenty-four hours. This serves as check on the machine operators and those who are feeding material to every piece of equipment. All that is necessary for the plant superintendent to do is to glance at the switchboard to see if his men have been working or loafing.

The lighting arrangement both inside and out at this plant is nothing short of marvelous. The large buildings are ventilated by sash which are operated in sections. There are 20,000 square feet of glass covering all of the buildings which makes the interior as bright as out-of-doors in every corner. Since it is necessary to run two shifts, a day and night shift, a great deal of attention was given to scientific lighting in the buildings and in the yard. At night when the lights are turned on there is nothing to be desired in the way of better illumination. Well placed lights brighten up every corner of the buildings, making it pleasant and safe for the workmen. In the yard lights are suspended from cables connecting the kiln stacks and other parts of the yard are lighted by "goose-necks." As high as 1,000 watt nitro-mazda lamps are used for this purpose.

There are two coal hoppers at the plant having a capacity of two cars each. A brick-paved driveway extends from these hoppers to the kiln yard which is paved with brick.

A loading platform, four feet high, whose top consists of a reinforced concrete slab supported on two concrete walls, completes the journey thru this wonderful twentieth century brick plant.

* * *

Are U. S. Stoneware Makers Neglecting Cuba?

An item appearing in the "Brick and Pottery Trades Journal," published in London, points out an opportunity which apparently our crockery manufacturers are not making a strong enough effort to grasp. The item reads as follows: It is a remarkable fact that, notwithstanding the great advantage possessed by the United States in their dealings with Cuba, which carries with it the special import differential tariff reduction of twenty per cent., their manufacturers do not seem to be able to compete with those of Europe in regard to fine crockery and china ware, for which there is a good market in Cuba. Formerly, Austria and Germany supplied the requirements to a very large extent, and, to a lesser degree, English goods had a strong hold. Now that the Central Empires are out of business—at least temporarily—there seems to be an exceptionally tempting opportunity for our potteries (English) to win this West Indian market.

* * *

Natco Tile at Kentucky State Fair

The only clay products exhibit at the Kentucky State Fair, with the exception of a small case of face brick, shown by one of the building supplies companies, was that of the National Fire Proofing Co., of Pittsburgh, consisting of a segment of a Natco tile silo, three courses high, and so arranged as clearly to show the methods employed in the construction of a hollow tile silo.

H. S. Jackson, sales representative for the agricultural department in Kentucky, was in charge of the exhibit and greeted numbers of the retailers of the state who handle the Natco line in their various communities. Mr. Jackson erected the section of the silo displayed and was present thruout the fair to hand out literature and discuss the merits of the Natco silo. Considerable interest in the exhibit was displayed by the farmers and, Mr. Jackson listed a number of good prospects. The Kentucky fair, favored with superb weather, was the most largely attended of any during all ten years of its career in Louisville.

Two concerns displayed wooden silos, but the concrete silo built three years ago by the State Agricultural Department, stood without attendants or inscriptions. For two years the state department pushed the concrete silo in a manner which the dealers and manufacturers in other lines rightly held to be unfair. Their objections appear to have been effective for the state has ceased its display of favoritism.

* * *

Ralph P. Stoddard Assumes New Task

One of the most interesting pieces of news that has developed in the "Sixth City" recently is the election of Ralph P. Stoddard to the office of Assistant to the President of the Ohio Builders' Supply Association, succeeding H. S. Gaines who has resigned to take a position with the Cement Manufacturers' Protective Association, Philadelphia.

RALPH P. STODDARD

The Ohio Builders' Supply Association is a live and rapidly growing organization of material dealers and the position to which Mr. Stoddard goes offers much in the way of opportunities for constructive work. Buckeye material men are fortunate in having secured the services of Mr. Stoddard, who has had a wide experience in organization work.

The clayworking fraternity first heard of Mr. Stoddard in connection with a remarkable publicity campaign conducted by the Cleveland Face Brick Association, which later developed into the Society Advocating Fire Elimination, which was formed in the summer of 1914. The S. A. F. E. and its numerous activities are well known to clay products manufacturers, so no mention need be made at the present time of this particular organization. However, it might be said in passing that the Society ultimately fostered the eminently successful Complete Building Show held in February of 1916, at Cleveland.

In addition to being secretary of the Society Advocating Fire Elimination, associate editor of "Construction," a magazine advocating the consistent use of fireproofing materials and protective devices, president of the East Shore Country Club, Cleveland, and a dozen other things, Mr. Stoddard was secretary of the Cleveland Board of Material Dealers. His admirable work in this last mentioned connection no doubt led to his appointment as assistant to the president of the Ohio Builders' Supply Association, in which capacity we look for his unqualified success.

* * *

Potters in Deadlock Over Wage Question

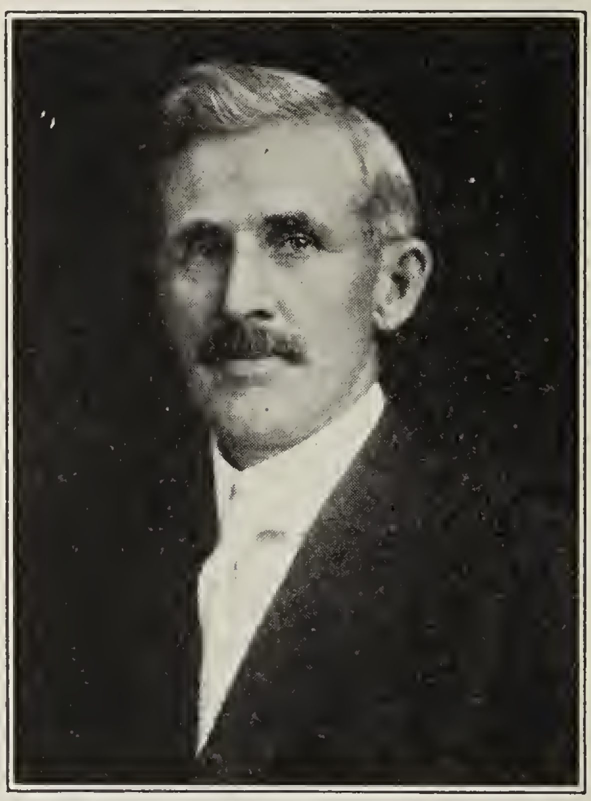
After two weeks of futile parleys, during which every phase of the pottery wage question was canvassed, an emergency conference of the American Pottery Manufacturers' Association and the Brotherhood of Operative Potters' meeting at Atlantic City, N. J., called in the hope of averting a general tieup of the industry, ended in a deadlock. Representatives of 10,000 workers who, under instructions from their annual convention, demanded wage increases ranging from 15 to 25 per cent., refused to assent to a counter-proposition from the manufacturers which is said to have embodied proposals providing for advances ranging to 15 per cent., taking account of a voluntary advance of 10 per cent. granted to workers in the sanitary branch during the last year.

The question of accepting the manufacturers' counter-proposition or rejecting it and tying up the industry until a new scale can be agreed upon now will be submitted to the local unions for a referendum vote.

* * *

MATT KING CALLED *to the* COLORS

MATT KING



C. B. PLATT

IF IT were not for the fact that these are days in which the unusual is constantly happening, it would surprise us very much to learn that Matt King had given up his civil life to become an important part of "Uncle Sam's" army. Captain King left Des Moines, where he has had his offices as secretary of the Permanent Building Society, on September 12, for a point in Oklahoma, to take charge of his company.

In appreciation of the good work which he has rendered Iowa clay products manufacturers, they presented him with the best army overcoat that could be purchased in Des Moines. This gift was very much appreciated by Mr. King.

The manufacturers of the state met in Des Moines to see Captain King off and to elect a new secretary for the association. C. B. Platt, of Van Meter, was selected to take Mr. King's place and assumed his duties on the following day.

WHAT DOES IT COST?

If You Really Know, You Are Better Equipped to Compete Intelligently, Says "The Nation's Business," From Which Magazine the Following Article is Reprinted

By Clinton H. Scovell

Who Addressed the Last Meeting of the Illinois Clay Manufacturers' Association on the Subject of Cost Finding

AIRPLANES, we are told, will win the war because they are the eyes of the armies, and get information not to be secured in any other way. The military commanders who have the most information can deliver blows where they will be the most effective.

The reasoning is the same and the facts are similar for the industrial manager. He has a precious stock of executive energy in his own person and among his assistants. He has at his command, plant, equipment and capital invested in inventories and other current assets. His success depends on using these resources effectively, and such effective use depends, in turn, on good judgment and accurate information.

Now, the cost accounting is primarily information. In an industrial enterprise its purpose is to guide the executive to profits and other tangible results of good management, and it is generally true that those executives are most successful who have the best information. It is easy to see why this should be so when one appreciates what information a good cost system can provide and how it can be used.

One conspicuous use of good cost accounting is for intelligent price making. Financial success in any manufacturing business, reduced to lowest terms, is getting more for the product than it costs to make. It seems obvious that accurate knowledge of costs should be a great help in maintaining the desired margin, and a good cost system will place such information before executives promptly, regularly, and in a dependable form. A great deal of manufactured product is now sold at less than cost, or at an unprofitable margin over cost. Under such circumstances, the manufacturer who fails to make a profit suffers from lack of knowledge of his own costs.

The greatest value of a cost system is not, however, in price making, but rather in the means it provides for business self-analysis. This works out in several different ways in different kinds of industries.

In most establishments there is opportunity and need for the analysis and distribution of overhead expense or burden, to see how much of the expense is necessary, and then how it bears on the product manufactured. Many a manufacturer gets his labor and material costs with satisfying accuracy, but goes wrong in reckoning burden.

DISTRIBUTING THE BURDEN

In the first place, the burden should be separated between elements that are fixed, such as insurance, property taxes and interest on investment, and items that are variable, such as indirect labor and supplies; and the closest watch should be kept on the variables to see that they are consistent from period to period, and sustain a proper relation to the direct labor employed, or to the volume of product.

It is to be expected that every business will make some effort to analyze burden costs in this way, but the regrettable fact is that few executives get such an analysis as well done as it should be, and accordingly few get anything like the maximum of economy which might be attained by this kind of administrative control.

Having secured information as to what makes up burden, and having established plans to control the variable elements and keep them at a minimum, the next step must be to determine how much burden belongs to one department or another, and how much to this or that article. Burden cost rises on any product when that product uses more costly manufacturing facilities (either more space or more equipment), or when the process is prolonged, thereby tying up the capital employed for a longer time.

The principle of including interest on the investment, altho recognized as a fundamental when stated in this form, is rarely given adequate expression in industrial accounting. To do so requires a calculation of interest on investment as an element of cost, and obvious as this requirement is for sensible and useful cost accounting, its importance is not generally understood, and the idea is actually combatted by many accountants who ought to know better. There is therefore a distinct tendency in shops with varying product to underestimate the burden cost of articles utilizing extensive and costly equipment, and to overestimate the cost of product made by hand or with lighter equipment. This tendency alone has accounted for a great deal of product being made without sufficient knowledge of costs, and accordingly sold at unnecessarily low prices.

The self analysis of a business made possible by a good cost system extends to labor and material as well as burden. When work is done on a dependable piece work system, the direct labor cost is a known quantity, but relatively little manufacturing labor is on this basis, and there is accordingly endless opportunity to analyze direct labor cost by well proved methods. The experience is almost universal, when work tickets are put into operation for the first time on products made by day work, that the executives have some emphatic surprises as to the actual or relatively high cost of certain items which they have been making. It is human nature to be careless about items that are not strictly accounted for, and it has happened frequently within the writer's experience that the mere installation of a dependable system of labor and output reports has immediately stimulated a marked increase in production.

MATERIAL: THIRD ELEMENT OF COST

The third element of cost (burden and labor having already been mentioned) is material. In some industries the opportunity for waste and inefficient use of material is little short of amazing. The only way to stop this loss is to keep track of the quantities on hand and consumed. Such records are furthermore an aid to intelligent purchasing, particularly as to quantities, and enforce the lesson that the great road to success in most industries is to stop leaks and waste, and have what is consumed really count for its full value in the product.

The accounting for material becomes more important and more difficult with the increasing size of a business. When the quantities, varieties, and uses for material have grown beyond the personal knowledge of an active manager, there is no alternative but to put the whole matter under a systematic clerical control, which will automatically provide the means for the supervision which, in a smaller plant, can be made sufficiently effective by personal attention.

Good cost accounting, however, is not wholly a matter of profit to the individual manufacturer. He may be driven to an analysis of his labor, material, and burden costs by evidence that a competitor is sustaining lower prices at a profit. The competitor, on the other hand, may be making prices unprofitable to himself as well as others. If this appears to be the fact, there is no argument more effective to turn him from such a course than some tangible figures as to what such articles have actually cost to manufacture under similar conditions in another plant. Such an exchange of information frequently converts a bad competitor into a good friend, and benefits other manufacturers and consumers as well.

Whenever two or more manufacturers of the same product attempt a discussion of their costs, they usually find that their cost accounting methods are not enough alike to admit of any conclusive comparison. If piece work prevails in the industry, or if operations are clearly defined, they may make a fairly useful comparison of labor costs; and they frequently satisfy themselves with the assumption that they buy their materials in the same market, and more or less at the same price.

There is usually no agreement whatever as to the classification of overhead charges or burden, or what is of more consequence, how this most important element of cost should be applied to the product. Even those establishments that have made some effort to develop an accounting practice are handling their cost charges in such diverse ways, that they suspect each other of selling goods at less than cost; or, not having any proof that their own cost system is dependable, they argue that if another manufacturer can afford to sell an article at a given price, they also can afford to make it and sell it at the same price.

All too frequently men will reason in this way in regard to competitors, without realizing that these competing plants may have no adequate cost methods, so that even the owners themselves do not know whether they can afford to sell the article in question at the price that is named. Instead of making money they may be slowly drifting toward bankruptcy, hoping that an increasing volume, or better market conditions, will save them from ultimate failure.

In every industry, some of the manufacturers undoubtedly feel that the price of the product is kept down by unintelligent competition from those manufacturers who are not making money, primarily because they are selling their product at less than it costs to manufacture. This may be due partly to different methods of figuring, so that the manufacturer complained of may in turn be thinking of others as price-cutters on some particular item.

COST COMPARISON KILLS UNHEALTHY COMPETITION

The way to dispose of the unhealthy competition, and the ill feeling and suspicion that frequently exists between competitors is to make a frank comparison of costs on typical items. There would be more of such comparisons if manufacturers only realized how much they could accomplish in this way.

The "open price" policy, or interchange of sales prices, is an important help to a better understanding and usually to better profits in an industry, but useful as it is, it is far less fundamental and permanent in its effect than getting dependable costs. It is essentially the difference between a good liniment to soothe pain and right living to eliminate the cause. As right living is not entirely an individual problem, but depends on neighborhood action on such fundamentals as pure water, adequate drainage, opportunities for recreation, etc., so there is need for joint action among manufacturers in the same industry to establish a plan for uniform cost accounting in their line of business.

In defining the details of a uniform cost system, there should be an especial emphasis placed on such matters as depreciation and interest on investment, and the important need for getting *all* expenses reckoned into cost. Something can be accomplished by even a uniform classification of accounts, but this is only part of the story, because a cost and accounting practice should be so developed that the executives may have each month both a manufacturing and trading statement and a balance sheet in a dependable form. The two things fundamentally necessary are to define in common terms the underlying principles of good cost accounting, and then to develop methods and make application of these principles adapted to the needs of the particular industry.

It is obviously a wise war policy to hunt down and put a stop to all sources of waste, but such a course of action, altho less urgently necessary, is none the less appropriate in times of peace. Americans have been ingenious and resourceful, and they have been surrounded by such limitless natural wealth as to insure a widely diffused material prosperity with relatively little effort. As the natural advantages are being more and more appropriated and brought into use, it becomes necessary to consider and adopt the methods that have brought industrial success in Europe, particularly in Germany. There must be a more thoro scientific utilization of material. The results achieved in every department of industry must be more carefully measured against the values consumed. The wise guess and "rule of thumb" must give way to laboratory methods and an exact accounting for costs and results.

UTILIZATION OF MAN POWER MOST IMPORTANT

Even more important than the use of material resources is probably the organization and utilization of our man power. The disgrace of poverty, ill health, ignorance, drunkenness, and vice undermining the industrial strength of the nation must be removed. This result is not to be secured by a legal mandate, or a mere promulgation of a reform in management. It is, rather, to be achieved only by a long process of education.

As far as this necessary educational progress is part of the industrial development of the country, it implies on the part of executives and managers a different attitude toward the labor forces than they have generally adopted heretofore. In the first place employment must become a much more systematic and intelligent process. The terrible waste of labor turn-over which now exists is but dimly appreciated and only here and there has adequate effort been made to stop it.

After workers have been more intelligently selected, they must be better treated in order to realize anything like their full efficiency. This may mean shorter hours in some cases, altho the movement for a shorter working day has already made great progress. It will not, however, mean less production, and the mistaken efforts of trade unionists and others to curtail output must of necessity fail in the long run. It may be necessary, and it is certainly coming to be regarded as desirable by more enlightened manufacturers, to give the labor forces more consideration and perhaps some actual participation in the factory administration, that is, in the actual settlement of shop and factory problems.

Profit sharing is frequently mentioned as an important factor in present-day management. It is, however, a general rather than a specific remedy. Properly conducted, profit sharing should be conducive to good will and harmony between employers and employes, and in that respect it will eliminate friction and operate for the benefit of all concerned. Irrespective of profit sharing, however, there is a duty on the American manufacturer to study his resources, establish standards of output, make just compensation for work done, and provide suitable incentives to make the total production as great as possible.

These problems of industrial engineering are just as imperative upon an intelligent executive as the proper utilization of steam or water power, the economical consumption of material, wise purchasing, or any other better understood phase of management. He must see to it that the facilities at his command are appropriately utilized, and that production is not curtailed by such unnecessary obstacles as defective routing and scheduling of work, congestion of materials in work rooms, and other obstacles which are generally found in American industrial establishments.

If our manufacturers can meet these duties, and rise to these opportunities, our industrial leadership will be secure.

* * *

Cleveland in Throes of Serious Situation

Brick manufacturing in Cleveland, together with practically all other industries in the "Sixth City," is face to face with two serious problems at the present time. One is the local and general traffic situation and the other is the evident inability to secure coal sufficient for the winter's needs.

Few manufacturers have been able to store fuel for an emergency; practically all have been operating on a hand-to-mouth basis. For some time purchasing agents were lulled into a sense of security by the price fixing of the government. Now it appears that altho the price has been fixed at a reasonable figure there is no coal available at that or any other figure. Much coal is moving on the railroads in the vicinity of Cleveland, but it is all going to the northwest under the government priority shipment rule. To add to the difficulties of this section the supply of natural gas, which has heretofore furnished sixty per cent. of the heat in northeastern Ohio is totally inadequate to meet the demands now being made upon it.

Thursday, September 13, the industrial development committee of the Cleveland Chamber of Commerce met to go into the coal question. Governor Cox, of Ohio, now has commissioners in Washington laying the situation before the authorities there.

Cleveland is again in the throes of a traffic congestion which has again placed it on the embargo list for many commodities. D. F. Hurd, traffic commissioner of the Chamber of Commerce, is taking steps to remedy the situation by introducing methods which had an alleviating effect during a similar situation some months ago. A campaign has been started to induce shippers to move shipments out of freight houses on the day of arrival.

◆ ◆ ◆

From MUD HOLE *to* HIGHWAY

THE FIRST TWO MILES of monolithic brick road construction in Cuyahoga County, Ohio, has been completed and is the mecca of interest of all Clevelanders, and many from outside of the city who are interested in paved roads.

The section finished is that part of the Som Center Road which lies north of Mayfield Road. The Som Road is sixteen miles in length and is so called because it traverses Solon, Orange, and Mayfield townships. The remainder of the sixteen miles is now being bricked.

When the question of paving the road was first taken up, other materials beside brick were suggested, but the farmers stood out for brick and withheld their money until brick was guaranteed. The road is being paid one-third by the county, one-third by the townships, and one-third by the residents along the road. The residents comprise several automobile manufacturers and many automobile owners.

The road is eighteen miles east of Cleveland, but not outside of the suburban district, and is one of the most important crosstown routes. It traverses the extensions of the following avenues: Miles, North Miles, Kinsman, South Woodland, North Woodland, and Mayfield Roads, all of which are paved with brick, laid several years ago.

"Being a thru route from north to south it is a heavy traffic road," said Will P. Blair. "If Cleveland continues to grow as recently it will soon be another East 105th Street in Greater Cleveland."

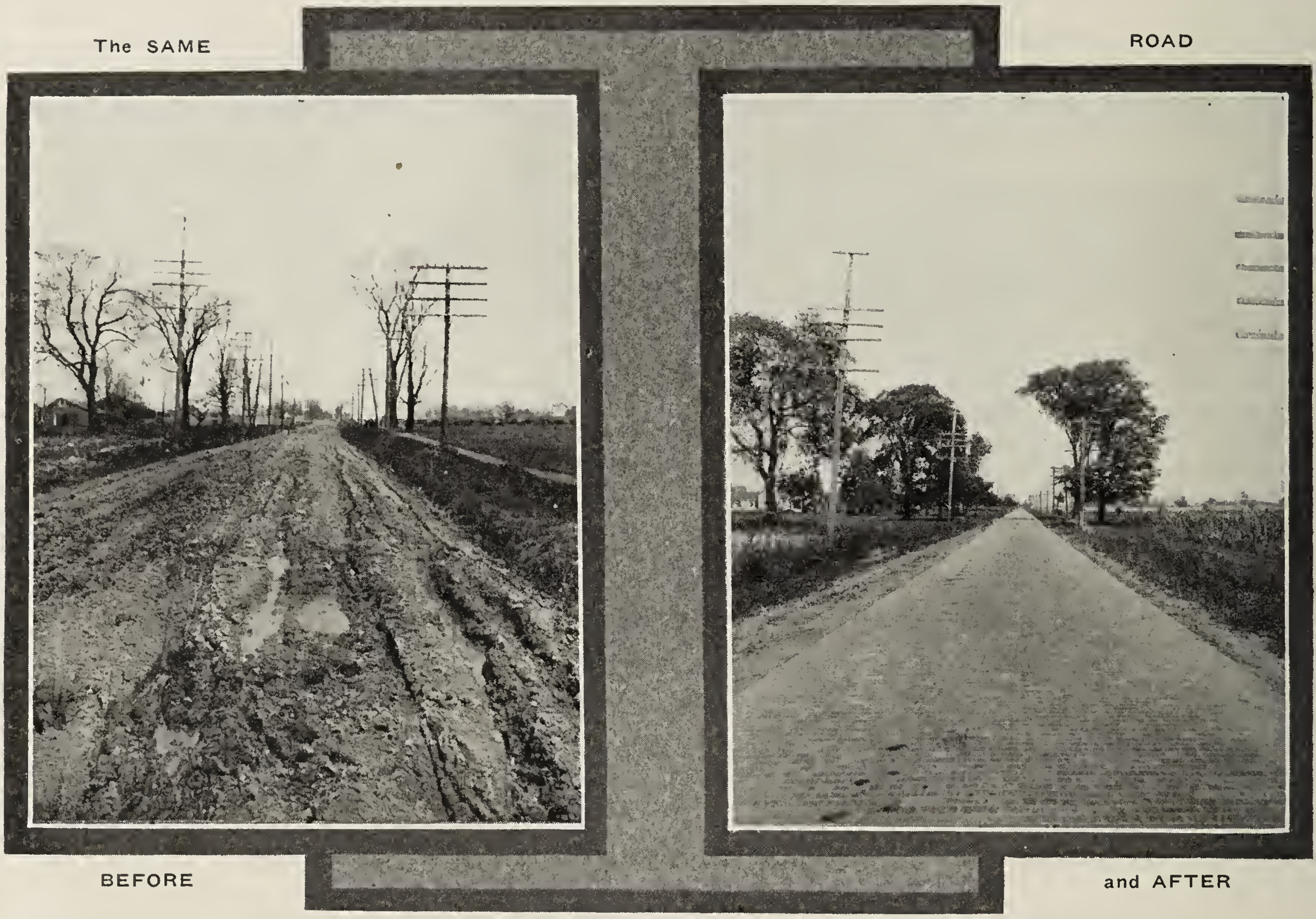
ENGINEER GREENOUGH DESCRIBES PAVEMENT

The road and its construction were described by Maurice P. Greenough, chief engineer of the National Paving Brick Manufacturers' Association, in the following manner:

Som Center Road is sixteen feet wide and sixteen miles long, consisting of four inches of brick laid on four inches of concrete. The brick is laid in the green concrete before it sets, after the following manner:

Steel side forms are placed in position as far apart transversely as the width of the finished roadway. They are held firmly in position, true to line and grade, by steel pins driven into the subgrade about ten feet apart.

A concrete mixer, supported by planking to prevent injury to the prepared subgrade, is placed in the center of the roadway, with the coarse and fine aggregate on the proper amounts deposited in piles ahead of the mixer. Whenever possible the aggregate should be placed outside the limits of the prepared subgrade in order to prevent the risk of injury by trucking. When it is impossible to avoid dumping the aggregate on the subgrade, a layer of sheeting should be spread upon it for vehicles to maneuver upon. The cement in sacks is placed in position convenient to the mixer.


The SAME ROAD BEFORE and AFTER

For convenience and simplicity in operation, the mixer is equipped with a conveyor bucket traveling on a boom about twenty feet long, in order that the concrete may be deposited quickly without disturbing the subgrade.

When work begins, concrete of a quaking consistency is deposited from the conveyor on the subgrade between the forms. It is then roughly struck off by means of shovels to a depth of about two inches greater than the required depth of the foundation. The concrete having been deposited, roughly struck off, and spaded along the side forms in order to allow only mortar to come in contact with them, the foundation is struck off to a true surface and luted by means of a double template, in which has been placed a dry premixture of sand and cement in equal parts.

The surface thus created in the rear of the template is remarkably smooth, entirely free from depressions, and is ready to receive at once the brick surface. No difficulty has been experienced in laying the brick in the usual manner, having them brought in on pallets with the best edge upward, the dropper standing upon the brick just laid. There is sufficient rigidity in the green concrete base even at this stage to resist the formation of any depressions in the surface by workmen moving about upon it. It is well however, to have boards laid for the men to walk upon.

The brick setting is immediately followed by rolling. A light hand roller weighing from four to five hundred pounds has been found entirely adequate to obtain a remarkably smooth surface, in fact, the surface obtained before rolling is as smooth as many sand cushioned streets after rolling.

In agreement with the general plan of operation in the Paris construction, grouting is made a specialized operation. All new work on the road stops about an hour before closing time for the day and practically the whole force of men detailed for grouting. A few workmen remove the forms from the previous day's work and place them in position for the coming day's operations. One or two men may also be detailed for cleaning up and making such minor repairs on equipment as may be necessary so that work may proceed uninterrupted on the following morning.

The grouted surface is allowed to stand uncovered until the following day when it is covered with a protective layer of sand or earth, moistened to prevent too rapid drying of the concrete.

The subgrade for this construction is prepared exactly as for the other types of concrete base, this being the only work required preliminary to the complete construction of the pavement. Besides producing a better road the monolithic construction has been found to be cheaper as no time is lost waiting for the concrete base to set and harden, and the work may be hastened and intensified by the fact that all operations are done in rapid succession to the stage where the road is ready for the grouting.

WESTERN MANUFACTURERS FORM SEWER PIPE ASSOCIATION *with* OFFICES *in* CHICAGO

AFTER MANY YEARS of energetic effort devoted to pushing his obsession—the promotion of burned clay sewer pipe—the western sewer pipe manufacturers have insisted that George H. Tefft, secretary-treasurer of the International Clay Products Bureau and sales manager for the W. S. Dickey Clay Manufacturing Company, be released from his last mentioned duties to give his entire time to that work in which he has become so efficient, a request to which Walter S. Dickey has very kindly consented. The International Clay Products Bureau with headquarters formerly at Kansas City, has been merged with one or two other smaller but similar interests, into the Clay Products Association, with offices in the Chamber of Commerce Building, Chicago. This is a big step forward in sewer pipe association work and the new organization together with that of the eastern manufacturers, which maintains headquarters at Akron, should form a mighty force for the promotion of burned clay sewer pipe and other materials made from clay on sewer pipe plants.

OFFICERS OF NEW ORGANIZATION

The officers of the new association are: President, L. G. Blackmer, Blackmer & Post Pipe Company, St. Louis, Mo.; Vice-President, E. S. Hoyt, Red Wing (Minn.) Sewer Pipe Company; Treasurer, J. L. Scott, Macomb (Ill.) Sewer Pipe Company; and George H. Tefft, Secretary and Manager. Membership in the association is limited to manufacturers of clay products in the United States and Canada, particularly vitrified, salt glazed, sanitary sewer pipe, segment sewer blocks, drain tile, vitrified wall coping, fire clay flue lining and chimney pipe. The association will devise ways and means for promoting and extending the use of vitrified salt glazed sanitary sewer pipe, segment blocks and other products manufactured by its members and the maintenance of high standards in their manufacture.

For many years the International Clay Products Bureau has been a member of the American Society for Testing Materials. Its members have served on committees on standard specifications and tests of sewer pipe and drain tile, known as Committees C-4 and C-6. The new organization will have complete testing, chemical and analytical laboratories, and will be better able to co-operate with the Society in arriving at its report.

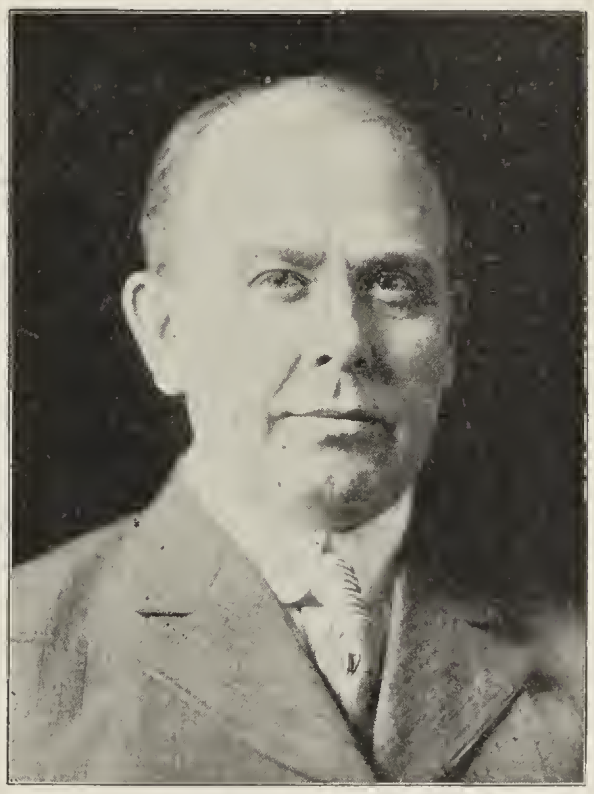
The Association will co-operate with the United States Public Health Service and state and local boards of health for improving sanitary conditions, as well as with the fire prevention societies, and with the National Board of Fire Underwriters to bring about better construction of buildings, especially chimneys, by securing the enactment of state laws, city ordinances and building codes requiring the use of fire clay flue lining and thus reduce the enormous waste and loss of property by fires that are caused by defective flues.

LAND DRAINAGE ALSO TO RECEIVE ATTENTION

The Association has offered the services of its engineers to the United States government in its endeavor, thru the Department of Agriculture and the various commissions, to increase the production of farm products by encouraging the drainage of wet and super-irrigated lands.

The Association will co-operate with various traffic bureaus of the railroads in their efforts to improve methods of loading and unloading and the transportation of clay products, and to secure just and equitable freight rates between railroads, manufacturers and consumers. Especial attention is being given at this time to securing the maximum loading of cars. The Association will carry on an active and vigorous campaign in conjunction with good roads magazines for the better drainage of wagon roads and the construction of hard-surfaced wagon roads.

Appoximately thirty of the principal manufacturers are charter members of the Association, and it is expected that within a few months all of the manufacturers of vitrified sanitary sewer pipe and blocks, wall coping, drain tile, and fire clay flues and chimney pipe will become identified with the Association and assist in carrying on a broad and constructive publicity and promotion campaign—a campaign that will not stop with engineers and dealers, but one that will extend to the consumers so they may know and appreciate the advantages of building their sewers, drains, chimney, road culverts, and so forth, with vitrified clay that will endure and always be sanitary. The endeavor will be to create permanent good will.



GEORGE H. TEFFT

* * *

Following a prolonged illness, Howard W. Valentine died in his home at Woodbridge, N. J., on September 5. Mr. Howard Valentine who was one of the best known and most active clayworkers in New Jersey, was president of the New Jersey Clayworkers' Association at the time of his death. He was a member of the firm of R. N. and H. Valentine, which has been in existence for almost a half century, and up to the time of his death he took an active part in the affairs of the company.

MAKING *the* BUCKET ELEVATOR TROUBLE-PROOF

Some Valuable Data on Construction and Maintenance, Designed to Prevent Rather than Cure Elevator Troubles

By Otis L. Helfrich

Author of "Notes on Waste Heat Tunnel Dryer Operation," "Prolonging Belt Life," and "Overcoming Cracking in Drying Clay Products"

ELEVATORS, unless properly constructed and maintained, are the source of unlimited trouble on clay plants. Their function in the operation of the plant is of such importance that when they are compelled to shut down, the whole plant suspends work and the actual manufacture of ware ceases. Undoubtedly, elevator trouble constitutes one of the greatest cares of the factory foreman, and could they be done away with, his task would be made immeasurably easier.

While it is true that any elevator will cause more or less trouble and delay in the course of a year from accidents which cannot be foreseen and avoided, yet it is also a fact that elevator trouble could be appreciably lessened if more attention were paid first to the proper construction of elevators and second to more intelligent care of them after their installation.

One of the most disagreeable features of elevator trouble is that it usually arises under conditions which tend to bring about trouble thruout the rest of the plant. In dry summer weather when the pit is in good condition and the clay working nicely thru the crushing and grinding machinery, little trouble is experienced from the elevators; but on wet days, and during the long winter months, when there are a thousand little troubles coming up along the line, the elevators, unless carefully watched, are apt to add their mite to the general plant discord and refuse to do their work.

The care which an elevator requires and the trouble which arises during its operation depends so largely upon its construction that a consideration of this phase of the subject must necessarily be given most attention. In fact, the two subjects of construction and maintenance are so closely allied, and so intimately related, that it is almost impossible to separate one from the other for the purpose of separate consideration; it is necessary to consider them both under the one head. In this article some of the points of proper construction will be touched upon, together with the general methods followed to keep elevators in proper working condition.

LARGE HEAD PULLEY ESSENTIAL

One very important feature of good construction is the size of the head pulley. This should be amply large for it is the friction of this pulley on the belt which pulls the load; and, of course, the larger the pulley the greater surface it will have in contact with the belt. A small head pulley frequently offers so little contact that insufficient friction is created to pull the load and the belt stands still while the head pulley turns on. Under such a condition, it requires but a very few minutes for enough heat to be generated to do serious damage to the belt.

However, this situation may also be brought about by running the elevator belt too loose. A larger pulley would furnish more friction to the belt and consequently allow it to be run looser and thus give more of a range between the tight and loose limit under which it could be operated. A good size of head pulley for elevators doing moderately heavy work is thirty inches. Where the centers are usually long or the work exceptionally heavy a pulley of larger size is desirable.

One source of considerable trouble in connection with the elevator head is the coating of the pulley with clay, which occurs most frequently in wet and in cold weather. In the winter time a thin layer coats over the pulley and immediately freezes. Upon this layer another soon forms and freezes. This operation keeps up until quite a thick layer of hard clay is frozen or caked onto the pulley.

The danger which arises is that the increased size of the head pulley will force the buckets out from the center far enough to snag on the discharge chute. In view of the fact that the discharge chute should be built very close to the buckets in order to catch as much of the clay as possible, leaving only about an inch clearance, it does not require a very large amount of clay caked on the head pulley to force out the buckets far enough to catch on the discharge chute or elevator housing. The results of this condition are buckets bent and torn off, the discharge chute damaged, and many subsequent troubles. This can be avoided by bolting a bar of flat iron, about ½ by 2½ inches, across the face of the pulley and just barely touching it. This will keep the face of the pulley scraped clean at all times.

DISCHARGING CLAY FROM BUCKETS

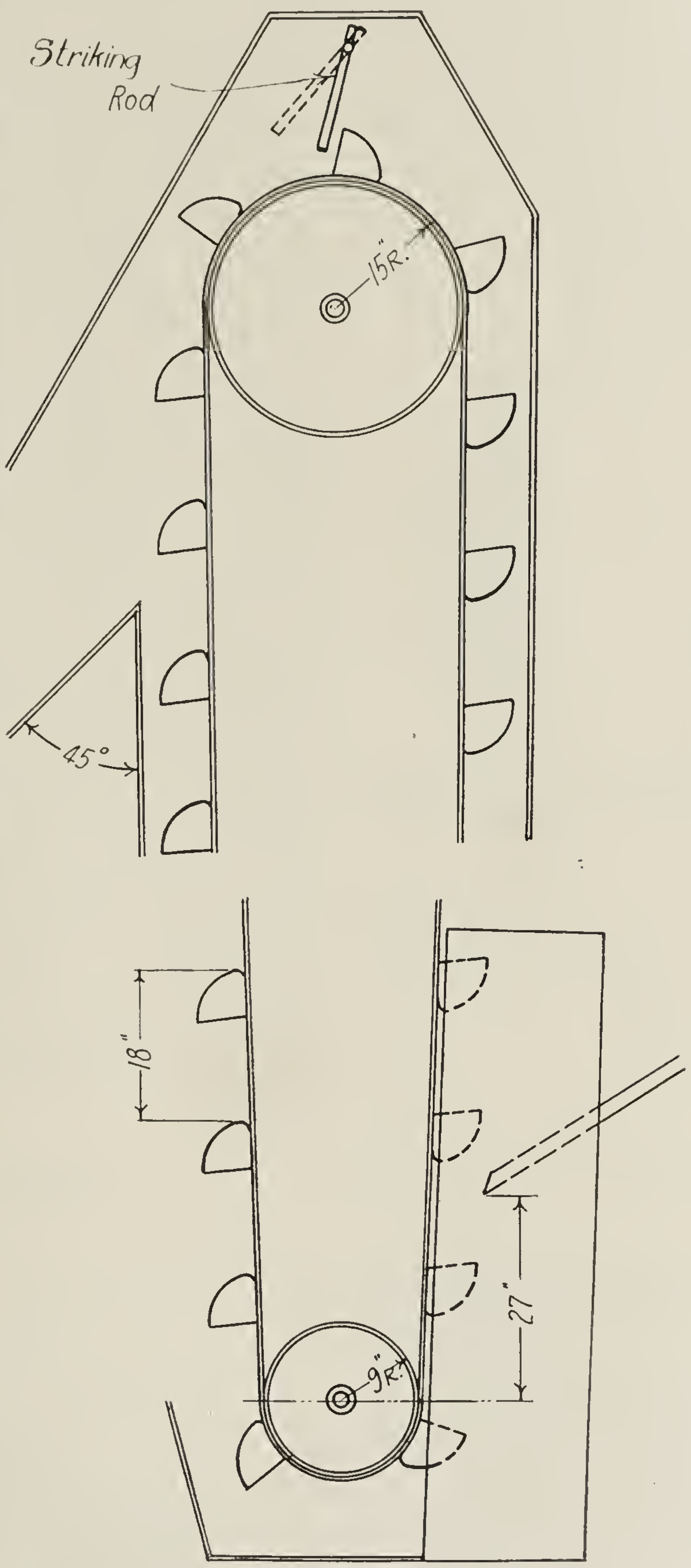
The speed at which the belt is operated is another feature that is important and depends on the height of the bucket used and the stickiness of the material. Some clays dump easily from the bucket while others, due to their sticking nature, are exceedingly hard to throw out.

The design of the bucket also wields a powerful influence on the manner in which the clay is discharged, as some types dump their material much more freely than others. The speed of the belt found to give the best satisfaction under general conditions is about 250 feet per minute. If it is necessary, a higher speed may be used, sometimes running as high as 350 feet per minute, and the material will still be dumped satisfactorily. Operating at a lower speed than 250 feet per minute makes it almost impossible to obtain the best results.

When it is found that the clay sticks to the buckets and does not dump clean, several things may be indicated. First, the buckets may not be correctly designed. This can usually be determined by an examination of the buckets themselves and altering their shape to remedy the trouble. Some buckets, for instance, have the lip bent in toward the belt. In this case the buckets can be easily shaped so that the lip points away from the belt.

The speed of the belt is also an important factor in the manner in which the buckets discharge the clay. Should a belt be operating at too high a speed the buckets, even while full of clay, will go over the head pulley so rapidly that the clay sticks to the buckets thru the action of centrifugal force, instead of dumping. The remedy in this case is obvious. If, on the other hand, speed of the belt is too slow, the clay will not be thrown with enough force to clear the buckets, but will dribble down over the backs of the lower buckets. In this case it is necessary to increase the speed of the belt in order to remedy the trouble.

The third cause for clay sticking to the buckets is that the clay is of an unusually sticky nature and for this reason is hard to discharge from the buckets. What is needed in this case is a slight jar at the proper moment to loosen the hold of the clay on the sides of the bucket. This jar can be supplied by suspending an old pipe or bar from the framework as shown in the drawing. As the buckets come over the head pulley they will strike against this pipe and the clay will be loosened so that it will discharge freely.



Cross Sectional View of Elevator, Showing Average Dimensions of Pulleys, and Proper Separation of Buckets in Relation to the Distance of Chute Above Center of Lower Pulley. Also Note Striking Rod Shown at Top, Used to Loosen Clay in Buckets As They Turn Over Head Pulley.

INDEPENDENT BEARINGS FOR SHAFTS ADVISABLE

A very important feature of elevator construction is that of independent bearings for the elevator shafts. It makes them easily accessible for rebabbitting and other repair work. When the elevator heads are cast in a solid piece repair work is made extremely difficult and inconvenient; either the whole casting has to be taken down in order to get the damaged part into the work shops or the workmen have to do their job in cramped quarters without moving the casting. In either case the operation is a difficult one and one which would be obviated by the use of independent bearings, which would enable them to be taken down and repaired with very little trouble. It is also a much more difficult task to construct the framework for an elevator head when the bearings are cast in a solid piece. A much better and more satisfactory job can be done with independent bearings.

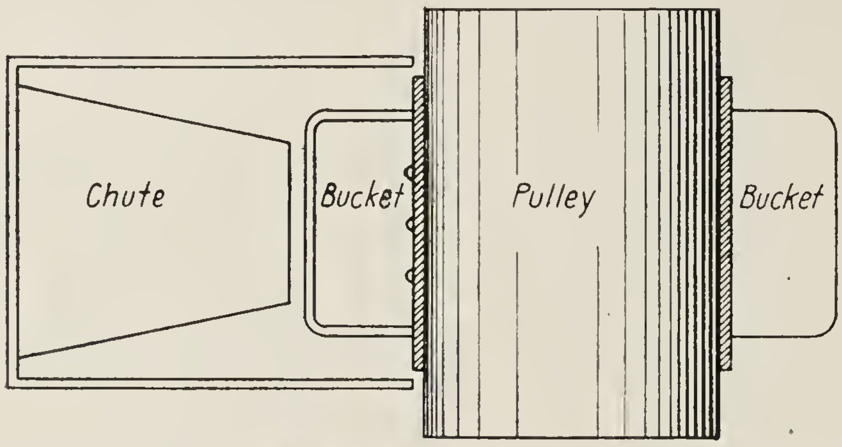
The pulley at the foot of the elevator should be a slat pulley instead of a solid one with the slats about 1½ inches apart. This allows the clay which drops on the pulley to sift thru instead of caking on its surface. The pulley in this manner is automatically kept clean.

The inevitable result of clay caking on the bottom pulley is that the belt will be made to run off center. The clay never forms in an even layer on the face of the pulley but usually forms in a ridge on one side causing the belt to run to one side and frequently so far off center that the corners of the buckets catch on some obstructions in the framework of the boot or in the housing.

AMPLE CLEARANCE REQUIRED IN BOOT

In the construction of the boot it is essential to have ample clearance for the buckets and to have every part of the boot easily accessible. When the bottom pulley is down as far as the take-up will allow it to go, there should be at least a foot of clearance between the lip of the bucket and the bottom of the boot. This will give plenty of room for shoveling in under the buckets—an operation which is bound to be required during the lifetime of the elevator. It frequently happens that a bucket is torn off and becomes lodged in the bottom of the boot, blocking the elevator. If there is only five or six inches of clearance in the bottom, the dislodged bucket may become so firmly wedged in between the bottom of the boot and the buckets on the belt that much time is lost prying, digging, and hammering them out and much damage done to the elevator. If plenty of clearance is left, a large portion of this trouble will be avoided; for, with the extra clearance, there is less chance of the bucket becoming wedged in, in the first place, and if it does become caught, it will be more easily removed.

Doors or boards that can be easily slid out should be placed not only in the boot of the elevator, but on every part of it where there is the least possible chance of something going wrong that you need to get at. It is never advisable to set up machinery and leave no doors or openings into the important parts. This is especially true of elevators; for they may give trouble at any time, and when trouble does come it needs to be overcome quickly. It is not unusual to see workmen tear boards off an elevator to get at the seat of the trouble, consume much valuable time in nailing them on again, and leave behind them a patched up job, when the whole operation might have been done in a few minutes if a door had been placed at that point. Suitable doors should be placed so that every part of the mechanism of the boot and head pulleys may be reached in a hurry.



Plan View of Lower Pulley, Showing Proper Relationship Betweeen the Mouth of the Discharge Chute and the Elevator Buckets, the Buckets Being Two Inches Wider in Order to Catch All the Material from the Chute.

Two large doors should be placed somewhere midway between the head and boot pulleys so that workmen can get at the belt to take it up or to repair buckets. These should be placed opposite each other so that one workman can stand on each side of the belt. Another trap door should be built directly over the head pulley as it frequently is necessary to get at the elevator from that point in cleaning or straightening buckets. On first glance it may seem like a waste of time and money to build all these doors, but after they are once installed, they will save enough time to more than pay for the installation.

FEEDING THE CLAY TO THE BUCKETS

It is necessary to use care in construction so that the clay will slide into the boot in the proper manner and be picked up clean; otherwise considerable trouble will always be experienced in having the boot clog up with clay. In the first place the chute which carries the material to the boot should be placed in such a position that the material will be dumped directly into the buckets instead of dumping into the bottom of the boot, so that it will be unnecessary for the buckets to dig it out. If the chute is placed as shown in the large drawing the clay will be dumped directly into the buckets and there will be no power lost in digging it out of the bottom of the boot.

Where this method is followed the mouth of the discharge chute should be two inches narrower than the buckets to prevent the clay from spilling over the edge of the bucket. The height above the center of the bottom pulley at which the clay should be dumped into the buckets depends on how far apart the buckets are placed on the belt; it should be at least 1½ times this distance. Thus, if the buckets are placed on eighteen inch centers the chute should be at least twenty-seven inches above the center of the bottom pulley. If this principle is followed, there will always be a bucket ready to catch the material as it comes from the chute.

On the other hand, should the chute be placed too near the bottom the clay will be dumped into the bottom of the boot and the buckets will receive but little of it directly; they must get the load by digging it out of the boot. This method has several bad features about it. In the first place considerably more power is consumed in running the elevator. Not only must power be furnished to elevate the material, but power is also consumed in digging the material out of the bottom of the boot. This is quite an important item and will run into many dollars worth of wasted horsepower in a year. Another bad feature is the extra wear and tear on the buckets. Instead of having the material dumped into them and acting only as carriers the buckets have to perform the work of shovels and dig out the material before conveying it. Altho, under good conditions, this is not particularly hard digging, it is digging just the same and common sense will tell us that any sort of digging will cause an elevator bucket to wear out more quickly than it would acting only as a carrier.

When it is necessary to pick all of the material up from the bottom of the elevator the clay becomes packed solidly in the boot, piling up so that the edges of the buckets just clear the clay. If a bucket should become slightly bent so that it sticks out farther from the belt than the rest it will dig into this hard packed clay and one of two things happens: either the bucket is torn off or the elevator stalled. Even under the best of construction conditions there is bound to be some clay spilt from the buckets and dropped to the bottom of the boot, but with only a small quantity it will neither pack hard in the boot nor will it require much power for the buckets to pick it up.

HOUSING IN THE BUCKETS

An important feature in the construction of the boot is that it be built in such a way that the material which misses the buckets will fall where the buckets can pick it up. One very good method is to build a housing in front of the elevator, extending from the bottom of the boot to a foot or so above the chute which dumps the material into the buckets. This housing should be built just wide enough for the buckets to clear safely and as near to the belt as possible. When the clay spills from the buckets it must fall down directly in front of them so they will have to pick it up. If some sort of protection is not afforded the clay, in spilling from the buckets, will scatter over the boot and a large part of it will drop and lodge between the belt and pulley, and cause considerable trouble.

Great care should be used in making the elevator housing dust-proof; and keeping it in that condition after the elevator is running. This is primarily a case of proper construction for a housing that is not first constructed solidly and dust-proof is hard to bring to that condition after it is built. Tongue and groove material should be used thruout. Care should be taken to brace the housing properly so that cracks will not appear later because of sagging. The general method of construction is to use

2 in. by 4 in. material for corner pieces and nail the housing to it. This type of construction is amply strong, but if no bracing is put between the 2x4s, the housing will soon sag out of shape. A very good method of bracing to prevent sagging is to put in cross pieces of 2 in. x 2 in. material so that the bracing is built in sections of ten feet. If the elevator housing is built dust-tight in the first place, and properly braced, much trouble due to dust will be avoided.

One common cause of leaky housings is poorly constructed doors, or no doors. When boards will have to be torn off to get at the elevator they are never replaced on the housing in as good a dustproof condition as they were in the first place, and a dust-leak appears. When the doors are built they should be solid and fit as snugly into their places as it is possible to make them. After the housing becomes old and cracks appear, much good can be done by choking them up with rags, a practice that is distinctly worth while.

PLACING THE DISCHARGE CHUTE

The placing of the discharge chute depends on the type of bucket used and on the speed of the belt. It will be found that in some cases the clay will be discharged freely into the chute if the top edge of the chute is on the same level with the center of the head pulley but this is not usually the case. From six inches to 12 inches below the center of the pulley is the best height and it will catch most of the clay at that height. If the clay misses a chute placed at a distance of twelve inches below the center of the pulley, it will usually be found that the clay is dropping straight down from the buckets and that the chute would not catch it, no matter how much lower it was placed. The type of bucket used plays an important part here, for, as previously mentioned, some buckets dump their material much more easily and completely than others.

One important factor in building the discharge chute is to have the slope steep enough for the material to slide freely. It should be at least 45° and if the clay is a sticky material, a steeper slope is advisable.

An elevator belt should be kept tight for several reasons. In the first place a loose elevator belt may swing so much that the buckets strike against some obstruction on the housing and are torn off. The load on an elevator is always a varying quantity and with a loose belt, the load sometimes becomes so heavy that the head pulley slips on the belt. The result is a stalled elevator and, worse than that, the pulley slipping on the belt soon generates enough heat to do serious damage to the belt. There have been cases of a belt getting so hot under similar circumstances that the core of it could be torn as easily as paper.

Another bad feature of a loose belt is that since the weight is all down, the belt presses very little on the boot pulley. As it becomes loose it tends to fall away from the pulley and may become so loose that the guiding power of the bottom pulley is lost, leaving the belt free to swing sidewise into the housing. This, of course, causes much damage to both bucket and housing.

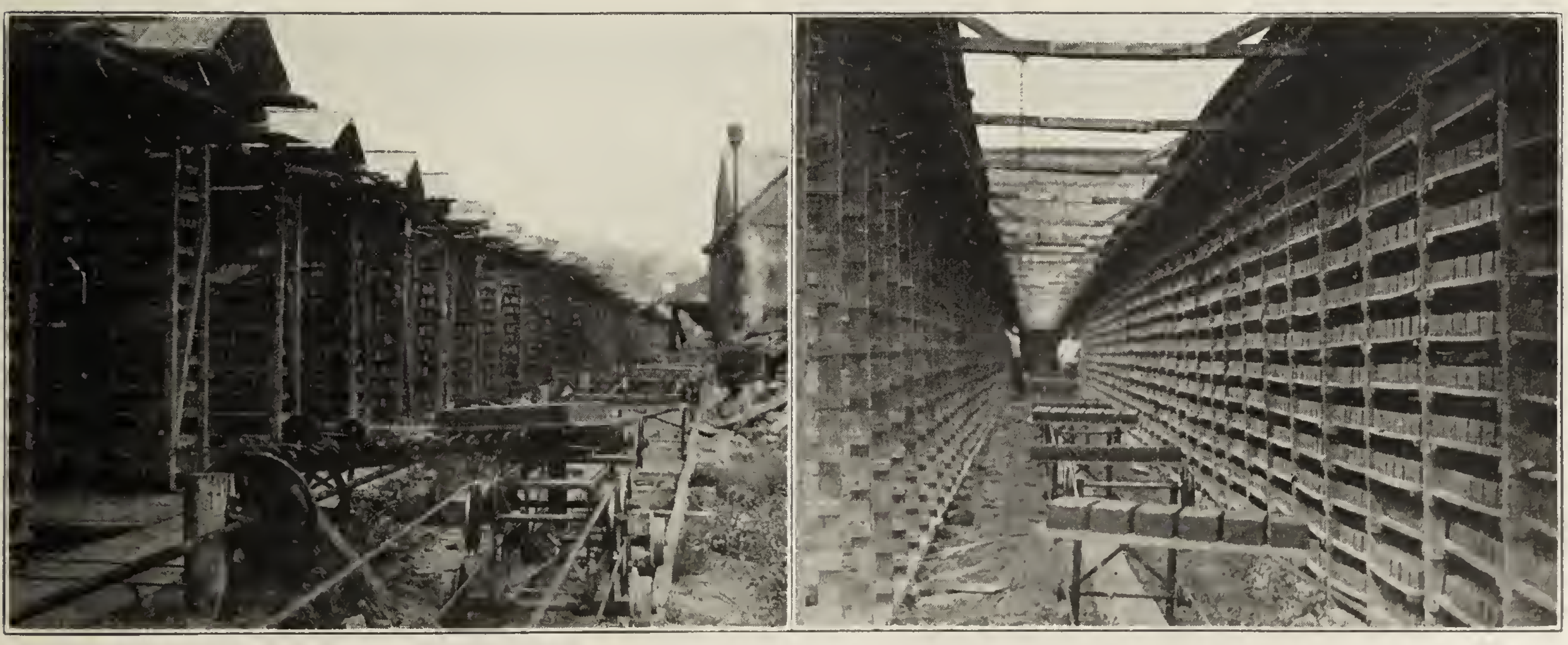
A lap joint is a very satisfactory method of fastening the ends of an elevator together and is made simply by lapping one end of the belt over the other and binding them together with elevator bolts. This distributes the strain of the fasteners over a large area of the belt and precludes the possibility of the fasteners tearing out. The belt must be lapped in the proper manner so that it will go over the pulley smoothly.

MAKE ONE MAN RESPONSIBLE FOR ELEVATORS

It is highly important to have one man who is responsible for the maintenance of the elevators. If neglected, an elevator may cause as much trouble as any other piece of machinery on the plant, but with proper and constant care, it can be made to do its work with little stoppage for repairs. The buckets and boot should be cleaned at least once every day and more frequently if

(Continued on Page 616.)

CABLE CONVEYOR MAKES DEBUT *in* EAST



While the Cable Conveyor Is a Very Ordinary Piece of Equipment on the Soft-Mud Brick Plants of the West and Middle West, Its Use in the East Is Comparatively New. The Conveyor System Pictured Above Has Just Been Installed on the Plant of the Park Brick Co., of Elmwood, Conn., Just Outside Hartford, and Has Effected a Large Increase in the Output of the Plant. A Similar System Has Also Been Installed on the Plant of the Charter Oak Brick Co., of the Same City.

HOW DO YOU HANDLE YOUR LEASE ACCOUNT?

Some Interesting Sidelights on Various Accounting Problems That Arise in Connection With Leases

By R. H. Butz

THERE are a number of clay plants operating upon leased property, and it frequently happens that the owners of these plants are uncertain as to methods of treating the various accounting problems that arise in connection with the leases. When a lease for a number of years is acquired for a certain sum of money it is entered on the books as an asset; but this asset must be written down so that when the lease expires the asset account will have been closed. This may not seem to be important, but if the manufacturer desires to have accurate information about his business it is necessary that he treat the lease account properly.

The simplest form of lease is that which provides for the payment of a stipulated amount each month as rent for the use of the property. In a case of this kind there is no entry for the lease as an asset. The monthly payments for rent are charged directly to the operating expenses, and these are the only entries that are necessary for a lease of this nature. There are, however, other forms of leases, and it is not unusual for the lessor to require that the lessee make a substantial advance payment at the time the lease is signed. This is for the purpose of protecting the owner of the property against any default in rent payments which the lessee might make. As an illustration of this form of lease we may consider the following:

A manufacturer leases a plot of ground and the buildings upon it for a period of ten years. Under the terms of the lease the lessee must pay six thousand dollars annually as rental, the annual payment to be made at the end of each year. However, the lessor further requires that the lessee shall deposit with the lessor the sum of six thousand dollars to provide against any default in rental payments. If the lessee performs his part of the contract for the first nine years, then the deposit of $6,000 shall be retained as payment of the tenth year's rental, and the lessee is not required to make any further payment for the use of the property. What entries should the manufacturer make for the transactions occurring under this contract?

INTEREST ON MONEY FREQUENTLY OVERLOOKED

From the terms of the agreement it is evident that the lessor has the use of the $6,000 for a period of ten years, and therefore receives the interest which this money earns. This is a condition that is frequently overlooked by the manufacturer when he signs a lease which stipulates that a deposit or an advance payment be made. In a case of this kind the manufacturer should request that the interest earned by such a deposit should apply towards the rental charge, instead of allowing the lessor to derive this income in addition to the rent. The annual interest on this amount at five per cent. is $300, and the manufacturer should therefore be required to make an annual payment of only $5,700 instead of $6,000.

However, we will now treat the entries as they should be made under the agreement as it is. When the deposit of $6,000 is made the manufacturer makes an entry as follows.

Dr. Prepaid Rent	$6,000	
Cr. Cash		$6,000

Prepaid Rent is an asset account and will be carried as such until the end of the tenth year. At the end of the first year the manufacturer makes a payment of $6,000 covering the rental for the year, and makes the following entry:

Dr. Rent	$6,000	
Cr. Cash		$6,000

At first thought it would appear that this is the only charge the manufacturer has in connection with the lease. It must not be forgotten, however, that he has taken $6,000 out of his capital for the deposit, and this money would earn interest if employed in his business or invested in securities. It is easily apparent that the manufacturer loses the interest on this sum, and that his annual rental is increased by this amount, which is $300 at five per cent. An entry to cover this added charge to rent would be:

Dr. Rent	$300	
Cr. Interest Earned		$300

There is no entry for cash because no cash was received. The interest was earned but not received by the manufacturer, and since it was not received it is a charge to the rent account, because of the terms of the lease.

At the end of the tenth year the Prepaid Rent account must be closed, as this asset will have been extinguished by them. For this purpose the entry given below is sufficient:

Dr. Rent	$6,000	
Cr. Prepaid Rent		$6,000

The entries given will take care of the transactions in a manner satisfactory to almost every business man who desires to know his annual operating expenses with the greatest degree of accuracy.

PAYING ENTIRE RENTAL IN ADVANCE

There is another form of lease that is found occasionally, under the terms of which the rental charge for the entire period is paid in advance. A lease of this nature came to my attention recently, the terms of which were as follows:

A manufacturer acquired a lease on a factory building for a period of ten years for which he paid twenty thousand dollars at the time the lease was signed, and agreed to keep the building in as good a condition as it was at the time he took possession.

In this particular case the lease is an asset which diminishes in value until its expiration, when the asset is completely extinguished. At the end of the first year the lease will have lost one-tenth of its original value, and at the end of the fifth year its value will be only one-half of what it was at the time it was acquired.

When this lease was purchased, the first entry was:

Dr. Prepaid Rent..............................$20,000
Cr. Cash $20,000

At the end of the first year the lease will have diminished in value $2,000, and this amount is then written off the asset account in the following manner:

Dr. Rent $2,000
Cr. Prepaid Rent $2,000

In this instance the interest charge on money paid in advance should also be included with the rent. The manufacturer surrendered $20,000 of his capital upon which he would have earned at least five per cent. if it had been employed in his business. Therefore, there is an interest charge of $1,000 which the Rent Account must bear for the first year.

Dr. Rent $1,000
Cr. Interest Earned $1000

The entries for the second year's rental will be as follows:

Dr. Rent $2,000
Cr. Prepaid Rent $2,000
Dr. Rent $900
Cr. Interest Earned......................................$900

The interest will be reduced by $100 each year, and the first years will have to bear the largest interest burden by this method. This is offset, however, by the fact that the manufacturer is under contract to keep the building in repair, and it is safe to assume that the charges for repairs during the last years of the lease will be large enough to equalize the heavier interest charges during the first years. The asset account, Prepaid Rent, will be extinguished at the end of the tenth year if the entries are properly made each year.

HOLD CONFERENCE *to* STUDY BUILDING SITUATION

"WE HAVE MADE PROGRESS, if nothing else, and have each other's views," said Marcus M. Marks, President of the Borough of Manhattan in closing a meeting of building and allied interests held in his office in the Municipal Building, on September 20. The conference, which was attended by about 350 men, had been called by the borough president to look into the causes of the present critical building situation in that city and endeavor to stimulate construction there to meet the increasing demands for commercial and residential properties."

A resolution to have the borough president appoint a conference committee of representatives of all businesses and industries most vitally interested in the building situation to examine the whole situation and endeavor to find for it a remedy which will unloose the knot without hampering the government in the prosecution of war was unanimously adopted.

"There must be," said Mr. Marks, "a proper stock taking, a weighing of the pros and cons with due regard to the interests of the government, the laborer, the tenant, the investor, the citizen, the real estate buyer and seller, the builder and the architect—anything to unloose the knot and keep the wheels moving, but not interfere with the government's successful prosecution of war."

Mr. Marks pointed out that the estimate on building plans filed in 1914 were $45,000,000; in 1915, $64,000,000; in 1916, $114,000,000, due to the anticipation of the restrictions of the new zoning law, and in eight months of 1917, $23,000,000, less than half of which had been carried out. In the first eight months of 1914 the estimates were $34,000,000; in the similar 1915 period $50,000,000 and in the corresponding time of 1916, $100,000,000.

Just before the resolution was adopted Allen E. Beals, of the Dow Service, suggested that the committee ascertain how many buildings had been held up because of present building conditions and report their findings to Washington in order that the subject might become a national issue.

DUTY TO GOVERNMENT COMES FIRST.

In opening the meeting Mr. Marks said in part: "War considerations come first in attacking business problems at this time. Everything that may interfere with wholehearted concentration in our efforts to push the war to a successful finish must give way. Still we must not forget that stagnation in any legitimate industry will tend to undermine the general prosperity of our country. Upon this continued prosperity we depend for our ability to finance our own and the allied forces.

"This conference has been called, on the suggestion of the Building Materials Exchange, for interchange of views on the present building situation. Many builders and capitalists have suspended constructive operations largely on account of high prices of materials. The question arises: Is the present level of prices likely to be maintained for some years to come? If so, is it not folly to allow the building industry and all the collateral industries depending upon it to stagnate when the demand for homes, particularly in Manhattan, so far exceeds the supply? Should population be permitted to seek homes elsewhere because Manhattan builders and their backers are waiting for a drop in prices of material which may not come?"

Declaring himself one of the optimists, Walter Stabler, controller of the Metropolitan Life Insurance Company, said: "There has been a stoppage of new engagements to lend money, I speak for myself. I have been afraid to lend because of the tremendous price of steel, two to three and a half times what it has been in normal times. It is hazardous to go into large building operations because of the uncertainty of deliveries. Money is necessary to loan to the government, which will soon issue bonds to an amount more than the cost of the civil war. Where will it come from? From the insurance companies and the savings banks, which are trustees charged with making safe investments. Those institutions are charged with greater responsibilities than ever. I expect that before many months companies will have to supply the government with $100,000,000. The lending institutions are holding back awaiting the needs of the government as a patriotic duty. I have the utmost confidence in the real estate situation. I don't believe that the city is suffering from lack of space. There is space enough for a year or two to come. I realize that some material men are suffering, but it can't be for long. The country's future is splendid, and all will get a share."

Then Henry Atterbury, an architect, speaking for the housing section of the Council for National Defense, said that the section had found a scarcity of housings where war work was carried on and had been getting reports from all over the land. He believed that if the war was to be carried on cheaply, money for building must be provided.

Joseph Paterno said that renting conditions in New York were wonderful. The trouble was, he thought, with owners who do not manage property properly, and hence foreclosures are made. He believed that if steel prices dropped prices of other metals would fall.

PRICES TO HOLD UP.

Eliot Smith, president of the Building Materials Exchange, said that the meeting was the result of a conference early in August of a committee to study the building situation, as operations had fallen to a low ebb.

The chairman of that committee, C. J. Curtin, said that the question was how to maintain patriotism and carry on business which was necesary to pay the country's increasing debts. "It is a national proposition," said he, "and the whole country is watching New York. The city requires a certain number of buildings a year to care for the influx of population. There is an unhealthy condition because there has been no building. I cannot see how to reduce the cost of material We must make conditions fit."

BIG REDUCTION IN BRICK CONSUMPTION.

W. K. Hammond, representing New York brick manufacturers, reported that there was a "very little brick market." He declared that reduced prices of brick would be impossible In 1914, he said, there arrived and were sold nearly four thousand barge loads of brick, and in 1917 six hundred, which probably would be increased to nine hundred for the year.

F. E. Conover, of the Building Trades Employers' Association, said that he "would not advise a builder to go into operations now, because of the tremendous unrest in labor We don't know when we will get deliveries. The government will take anything it wants and we must uphold the government and have no right to whimper. The builder should not be asked to take all the gamble. Why are so many banks calling loans? Can't they loosen up a little. We can't build without loans. I cannot see any prospect for building on account of prices and loaning conditions."

L. W. Harrington, of the Credit Association of Building Trades, made a plea for the committee of different interests to harmonize the situation.

Arthur B. Pendleton, executive secretary of the National Terra Cotta Society, assured his hearers that there would be no price recessions. "Much money," he asserted, "is being held back thru timidity."

Herbert D. Fredenberg, of Fredenberg & Lounsberry, face brick and cement makers, prophesied that prices would remain as they were, war or no war. "If putting up buildings ceases," said he, "it may do the government an injury, as there won't be housings for workmen to help the war along. Lending institutions should be careful, should examine and be justified in increasing loans to meet increased costs of materials, which in turn would be justified by increase of income."

Benjamin Traytell, of the marble industry, said: "The prosecution of the war is the first duty of those in authority. War costs lots of money. The uncertainty of deliveries is the serious hold back item. Who wants to tear down an old building on an uncertainty? Interest piles up. Such obstacles are going to stand in the way for a long time."

"Prices have nothing to do with the situation," said Walter T. Smith, vice-president of the George A. Fuller Construction Co. "In the congested condition today, after steel has been bought and fabricated, the problem is to get it. The steel company's products are short. After January 1, I predict that there will be a readjustment in a natural sane way and business will improve. The question is not one of getting business, but of getting it done after getting it."

* * *

Prevention of Fire Loss

"Preventable fires is more than a private misfortune. It is a public dereliction. At a time like this, of emergency and of manifest necessity for the conservation of national resources, it is more than ever a matter of deep and pressing consequence that every means should be taken to prevent this evil."—*Woodrow Wilson.*

* * *

A Brickmaker With a Unique Reputation

"Uncle Moses" Quarter, of Saco, Maine, who probably is the oldest brick manufacturer in New England, if not in the country, and an ardent supporter of Uncle Sam, declares that if he were able he would like nothing better than shouldering a musket and starting on the trail of the Kaiser. For more than sixty years Mr. Quarter was engaged in the brickmaking industry, much of which time he was proprietor of a yard on King Street, Sasco, which he sold a few years ago to Saco Brick Co. He was born in Quebec and learned the brickmaking trade when a boy. Later he moved to this country and was for a time in business at Needham, Mass., before going to Maine. He still takes an active interest in the work of the local yard altho he does not admit that the modern machinery can turn out any better product than that which he made by hand years ago. Mr. Quarter never owned an automobile, never rode a bicycle, and never saw an airship or a moving picture show, but declares he is just as happy as people who have done all these things and he hopes to live to be one hundred years old as did both his father and his uncle.

* * *

Ore Importations from Greece Increase

The shipments of magnesite and chrome ores from Greece to the United States show an enormous increase in 1916 over that in 1915. A great part of this raw material was used in the manufacture of refractory brick According to the "Commerce Reports" issued by the United States Government the exports of chrome ore from Greece to the United States in 1915 were valued at $52,378. The shipments of magnesite ore during the same year amounted in value to $298,141. In 1916 the exportation of chrome ore from Greece rose in value to $142,747. while that of magnesite ore reached $803,197.

* * *

Farmers Profit Thru Paved Roads

The value of paved roads to farmers has been strikingly illustrated during the harvest season this summer, when many people living in towns and cities motored out into the country to purchase farm products directly from the farmer, getting it at a saving to themselves and at the same time allowing the farmer a larger profit than he would ordinarily receive. To motorists the sight of a farmer selling his products over the front yard fence to customers who have driven out in their automobiles is not an uncommon one; however, it would have been almost an impossible one before the advent of good roads.

The GENERAL MANAGER ATTENDS ANOTHER RATE HEARING

He Continues His Study of Barnes' Rate-Checking System, and Is Shown a Few Examples of Its Effectiveness

By G. W. Greenwood, M. A. (Oxon)

Secretary, United Fire Brick Company,
Uniontown, Pa.

"GOOD MORNING, Mr. Barnes," said the General Manager as Barnes entered with a bunch of papers. "You look quite gay with your lavender tie. How did you come to spring that on us?"

"Oh, I just got a new color for a change," Barnes explained while a smile played over Jimmie's half averted face as he passed out with a waste paper basket. "Confound that shrewd young rascal," thought Barnes, "I wonder if he heard Miss Lane yesterday saying she liked lavender ties."

"Confound That Shrewd Young Rascal," Thought Barnes. "I Wonder If He Heard Miss Lane Saying Yesterday That She Liked Lavender Ties."

"What are you going to surprise me with now?" asked the G. M. "I have an hour I can put in with you. Are you going to prove to me that if the average selling price is above the average cost for the month, the concern is headed toward bankruptcy?"

"That may happen, provided the brick made and brick sold are not of the same kind. But just at present I am prepared to continue our discussion of freight rates."

Picking up a pencil from the desk, he continued, "The other day we got as far as to show that each sale had appended to it a tabulation like this":

Est. Wt. ....
R. R. Wt..
Rate ....
Freight ....
Paid ....

"We discussed the way the first item checks the railroad weight as shown by the bill of lading and subsequent freight receipt, so that we do not get caught with excess railroad weights. We also insert the rate at the time the shipment is made," reaching for his knife and preparing for an attack on the borrowed pencil.

GETTING THE RATES

"How do we get the rate? From the railroad company?" asked the G. M., holding out one hand for the pencil, and in the other extending a long slim stick of pine. Barnes exchanged, with a good natured smile, and got ready to mutilate the pine slab.

"Not exactly. We carry a rather complete line of tariffs, and when an order is booked the rate is inserted on the order sheet. When a sale is made applying to this order, the rate is copied on the sale. Sometimes there are more routes than one by which a shipment may travel, and of these one rate may be considerably lower than another. In such cases it is to our interest to specify the route which affords the lower rate. For example, we booked an order recently to Slater. The rate from Cayle is $2.21 by one route and $2.61 by another and as we are selling with freight allowed to destination, we naturally chose the one by which the lower rate applies.* Can you think of an easier way to add over a dollar to the base selling price?"

"Not without adding it to the price the customer has to pay," admitted the G. M. "How does the line up appear when it is complete?"

---

*The dates, rates, and amounts in this article are all from actual examples, with only the proper names together with the names of the railroads changed.

Barnes handed him a sheet reading as follows:

Est. Wt.	68,000
R. R. Wt	67,800
Rate	$ 1.27
Freight	43.05
Paid June 18, 1917	

"You can see how closely the estimated weight agrees with the railroad weight," continued Barnes. "As soon as the bill of lading is received showing the railroad weight and the rate at which it was billed, we compare their rate with the rate we have already inserted, and if they agree, the amount of freight is worked out and inserted."

"And what if the rate does not agree?" naturally asked the G. M.

"Then we investigate our authority for the rate we have inserted, and in case we still find we are correct, we return the bill of lading to the railroad company for investigation. If they are correct, they cite their authority, and we back down. Now, in the above case, the amount of freight as worked out by us was $43.05, the railroad company presented a prepaid freight bill for this exact amount, which we paid, as you will see, on June 18."

CATCHING AN ERROR

Having hacked his stick into a sort of paddle, Barnes started to shape the handle and continued: "A funny thing happened in this case. The shipment moved over two lines. We prepaid the entire charges, clean thru to destination."

"Is it correct to say 'clean thru' when one means 'clear thru'?" asked the G. M., critically.

"I am under the impression they mean the same, but I would not like to say that to go clear thru a brick plant was the same as to go clean thru. However, in this instance, the consignee paid his bill in full, and a little later the delivering line soaked him for additional charges to the tune of $17.96. As he had bought the brick with freight allowed to destination, he came back at us for this amount."

"No wonder," said the G. M. "What is our next move? Pay them and make a claim against the initial line?"

"Not necessarily. All that is required is for the delivering line to refund to him the amount improperly collected. We have written the initial road as follows":

> On June 4 we shipped from Bennett, Md., SVRR 12543 to Summit Furnace Co., Summit, Pa.
>
> We prepaid the entire charges on this shipment, amounting to $43.05, of which $25.09 went to the XYRR and $17.96 to the Summit Valley R. R.
>
> On top of this, the Summit Valley collected $17.96 from the consignee.
>
> Can't you get after them? The record of the Bennett agent is PP Freight Bill 7655, Weigh Bill 2491, receipted by him under date of June 19.

"Looks as tho railroad rates were an interesting field," commented the G. M. "Do you find enough cases of this sort to keep the cobwebs out of your brain?"

ANOTHER CASE

"You bet your neck," said Barnes, spinning his improvised paddle on the point of his knife. "Just size up this":

Est. Wt.	58,475
R. R. Wt	59,800
Rate	$ 1.25
Freight	37.38
Paid, June 12, 1917	64.58
Refund, Aug. 8, 1917	27.21

"In this case, the delivering line collected from the consignee $64.58, which he deducted in settlement with us, sending us the freight receipt reading as follows":

> 59,800 lbs. at $1.08 per net ton, $64.58

"Looks to me as tho they had a much better rate."

"Yes, but at $1.08 per net ton the freight charges should be $32.29. So we wrote the following letter to the initial line":

> We enclose a paid freight bill covering a deduction from our account of freight on D&H 20585 shipped by us May 17 from Bennett to Power Boiler Co., Brill, Ohio.
>
> Will you please take a bird's eye view of the extension and advise if they haven't doubled things up?
>
> Also, we would not mind knowing the authority for the rate used.

"Thus you see," resumed Barnes, "While we do not say the rate is, in our opinion, incorrect, we do our duty by tipping them off. If the $1.08 is correct, they would have cited us to the authority."

As He Returned to His Desk He Tried to Look Unconcerned, But at the Same Time Wondered if Miss Lane Would Notice His New Tie.

"And if not?"

"Then they would discover this in their attempt to substantiate it. However, on August 8, we received from the railroad their check for $27.21, with no explanation, so they evidently came to our conclusion as to the correct rate and amount."

"According to your calculations, they refunded a cent too much."

"That shows we are on the right scent," grinned Barnes. "However, I see your hour is exhausted, and I fear you are too."

"I'm sorry it is, the time, I mean," corrected the G. M. "I came near being in the class of the man who received a book from an author who was a personal friend. He cogitated awhile and then wrote, 'Many thanks for the book. I shall certainly lose no time in reading it.' But as the family is away, and I am batching, can you take lunch with me at the Brixton Inn at noon?"

"I'll be glad to," said Barnes, with alacrity. As he returned to his desk, he tried to look unconcerned, but at the same time wondered if Miss Lane would notice his new tie.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

Article Seven, in Which Is Discussed the Subject of Quantity as a Factor in Rate-Making

By Sydney A. Hale

SYNOPSIS: Freight rates, which are a direct charge upon every business, may be considered from several angles; as the basis of all rate-making is the freight classification. Dependent upon this, and designed to take care of traffic in general are class rates. As the first step towards meeting special traffic and commercial conditions, comes the exceptions to the classification. Finally we have special, or commodity, rates. Rates must be considered, however, not only from the commodity, but also from the quantitative standpoint. The first division of this latter question, carload rates, is here discussed.

A CARLOAD RATING should be established for a commodity when that commodity can be offered for shipment in carload quantities, unless public interests or other valid considerations require the contrary. The establishment of carload ratings will meet the needs of new and growing lines of industry. It should not be a prerequisite to the establishment of carload rates that there should be a reasonable prospect of a minimum number of cars within a certain period of time.—In re Suspension of Western Classification No. 51, 25 I. C. C., 442.

QUANTITY AS A FACTOR IN RATE-MAKING

The general unit of measure in rate statements is a hundred pounds. In the absence of qualification, when a certain rate is mentioned by traffic men, as, for example, "the rate on linseed oil from St. Paul to the Pacific Coast is 90 cents," it means that the rate is 90 cents per hundred pounds. Some rates, particularly upon heavy commodities such as coal and iron ore, are generally, altho not invariably, stated in cents per ton. In some cases a short, in others a long ton is meant, but the tariff naming the rate specified always covers this point. Charges are named upon some commodities as so much per crate or per barrel. Rates so stated are met with frequently in schedules governing the movement of fruits and vegetables. But these exceptions are more apparent than real. Statement in rates per ton does no violence to the hundredweight principle and the statement per crate or per barrel is based upon an estimated weight so that these rates really go back to the rates per hundred pounds idea.

Equally important with the application of rates to commodities is their application in determining the unit of shipment. From the latter standpoint, rates may be considered as falling into three divisions. First, and most important, come carload rates; second, less-than-carload; third, any-quantity rates. As the hundred pounds is the unit of measure in a rate statement, so, too, the carload is the unit in quantity application. This is not difficult to understand. A freight train is made up of cars. The most economical movement is where the entire load in a car moves to one receiver Because of this, writers and speakers on traffic matters, unless their statements are directly qualified, when quoting rates mean not only that the rate named applies upon one hundred pounds, but also only when moving in carload quantities.

CARLOAD VS. LESS-THAN-CARLOAD RATES

True carload rates are always less per hundred pounds than the rate on the same commodity when moving in less than carload lots. This is due not only to the fact that the freight train unit is a car and that in actual transportation handling is easier, but also to the general rule that carload freight is loaded by the consignor and unloaded by the consignee, while less-than-carload freight is loaded and unloaded by the carriers. To this loading rule, both with respect to carload and less-than-carload freight, there are certain exceptions, but these have no place in the consideration of the general subject.

Reducing the question of carload vs. less-than-carload rates to plain commercial terms, we come to nothing more nor less than selling transportation in wholesale and retail lots. The average dealer is willing to sell a keg of white lead at a cheaper rate per pound than a two pound can. He is put to less selling and handling expense. So, too, the expense of handling 40,000 pounds of paint in one carload, loaded by the shipper and unloaded by the receiver and moving under one bill of lading is less than that of handling one hundred 400-pound lots, each moving upon a separate bill, loaded and unloaded by the railroads and requiring separate records throughout the transportation service.

Some attempts have been made to carry the wholesale rate-making idea beyond the car unit to trainloads of a specified number of cars, but, in the opinion of the Commission, such rates represent discrimination in favor of a few of the largest shippers and are, therefore, contrary to the spirit of the Act to Regulate Commerce, which is to secure equality of transportation service and conditions, not to the few, but to all shippers. It has been repeatedly held that the mere fact that certain traffic may be handled in trainloads can not be made the basis of rates different from those applied to shipments in single carloads.

DIFFERENCES MUST BE REASONABLE

While the establishment of lower rates per hundred pounds upon carload business than upon similar business shipped in less-than-carload quantities is upheld, the difference in rates must not be so great as to unduly discriminate against the shipper of less-than-carload freight. The test to be applied is this: Does the difference fairly represent the relative difference in the cost of handling the two classes of freight?

If this question be answered affirmatively, then the adjustment is equitable. If, on the other hand, the spread between the two rates is substantially greater than the difference in transportation costs, then the carload traffic is unduly favored at the expense of the less-than-carload freight. No rule can be laid down as to how great the spread must be to pass the line of an equitable adjustment. It is a question of fact to be determined by the nature of the traffic, the relative costs and the general transportation conditions surrounding the service.

Whether carload rates shall be provided upon commodities is also a question of fact upon which no general rule may be laid down. The broad statement that such ratings should be established whenever carload quantities are offered for shipment has been qualified by the Commission so that the principle applies "only in case the public interest or other valid considerations do not require the contrary." In passing upon the question, the Commission has declared that it will not stop at the fact that freight is so offered, but will also inquire into the commercial and economic aspects of the situation.

While difference in handling costs is recognized as the fundamental justification for a lower rate per hundredweight on carload than upon less-than-carload shipments, that difference will not be allowed to outweigh other considerations when the question is not the adjustment as between carload and less-than-carload rates, but the establishment of a carload rate because "so to hold for the sole reason that the cost of service to the carriers is less in the case of the carload shipment would be to hold that a trainload should receive a better rate than a carload." On the other hand, if the Commission is of the opinion that a carload rate is justified, the fact that only a few shippers can take advantage of it will not be a bar to its establishment.

PREPARING *and* WEATHERING CLAYS

CLAY PRODUCTS manufacturers invariably lay a great deal of stress upon the burning and drying stages in the manufacture of their ware, but neglect to take proper precautions in the preparation of the clay. Difficulties which arise in these stages, and which it is attempted to solve by changing the methods of drying and burning, may often be traced to the preparation of the raw materials—a possibility that is frequently overlooked. There can be no doubt that many of the failures recorded in the annals of the clayworking industry have resulted partly thru the lack of knowledge of the preparation of clays and shales.

The preparation of clay is a process with a threefold object in view; namely, the homegenizing of the materials, the purification of the clays, and the development of plasticity. A study of the geological occurrence of clays, of their mineralogical composition, and their varying chemical and physical properties, shows very clearly the importance that must be attached to the blending in preparation, without which we would not have uniformity of color or shrinkage, nor could we produce sound ware.

If the process of thoro mixing involves simply the use of one material of practically constant physical and chemical constitution, the problem becomes simple. In other cases it involves the mixing of dissimilar substances such as two different shales, or two different clays, or shales and clays, clay and grog, etc., in which cases it is important that the materials be uniformly mixed in order to obtain a uniform product. There are a number of different processes involved in clay preparation, such as:

Choice of materials at bank.
Weathering process.
Proper proportioning of the materials.
Grinding or disintegration.
Sizing the grains, or screening.
Development of plasticity.

Each stratum in a clay bank always varies in thickness as it proceeds farther into the bank. For instance, supposing we had a bank of clay in which there was a five-foot thickness of soft clay, then a seven-foot thickness of hard shale, followed by a two-foot vein of limy shale, and at the bottom a ten-foot thickness of hard shale. If we proceeded about thirty feet farther into the bank the strata might be found to have the following thicknesses: seven feet of soft clay, then four feet of hard shale, followed by four feet of limy shale, under which lies nine feet of hard shale.

Now, as we stripped off the face of the bank with a steam shovel we would obtain the following proportion of materials in the order named above: 5 to 7 to 2 to 10. All of the stages of manufacture would be regulated according to those proportions. However, after a period of six months or so, when the shovel had advanced thirty feet, the proportion of materials would be in the following ratio: 7 to 4 to 4 to 9, an altogether different mix than the first. This mixture would require adjustments in the methods of manufacture; and it serves to emphasize the fact that when difficulties present themselves one should look to the clay bank as a likely source of the trouble.

MEETING THE VARIATIONS IN MATERIALS

The way to remedy the conditions outlined depend upon circumstances. It might be possible to mix this clay with some clay in another part of the bank, where the clays occur in different proportions. If one of the shales is too nonplastic and gives trouble due to that reason, it might help to weather the clay.

The weathering of clays in some cases is of great importance. In general, the outcrops and overburden are already weathered, due to the action of such agencies as rain, air, frost, etc., upon them. This action, under favorable conditions, only reaches to within five or ten feet below the surface, because after the weathering has gone on for long periods of time the air does not have further opportunity for access because of the compactness of the strata and the existence of well defined lines of drainage which carry off the water instead of allowing it to penetrate to the interior.

The chief changes resulting from weathering are the breaking up of the hard rock by such action as that of change in temperature, frost, etc., and the chemical changes due to soluble salts being leached out by water. These soluble salts are principally the sulphates of lime, alumina, and the alkalies. Other chemical changes are a change of ferrous iron to ferric, and a change of sulphur to sulphuric acid, which in turn may form sulphates.

WEATHERING PURIFIES SHALES

The weathering of shales not affected by natural weathering may be brought about in several ways. A method sometimes used is to dig the shale and place it on a pile of not very great height and allow the action of weather to take place for a period of six months or more, depending upon the time required. The weathering of clay involves a purification of the clay by leaching out the impurities and an increase in plasticity due to the growth of organic matter and the breaking down of some of the lumps to fine grained material. The first process generally takes considerably longer than the latter.

Another method of weathering, or aging, as it is sometimes called, is to grind the clay or shale and then to dump it in thin layers over a long pile in a storage bin by means of an automatic tripper. By grinding the clay in this manner, weathering or aging takes place with greater speed than by the other method, and the plasticity of a clay may be much improved in a comparatively short time.

Hard shales in the ordinary process of clay preparation for cruder clay wares, develop very little plasticity. The same shales if weathered are frequently brought to a high degree of plasticity.

Usually hard shales are covered in the bank with a layer of partially weathered shale upon which rests a layer of soft clay. In order to use the hard non-plastic shale it is necessary to add to it sufficient plastic clay to form a bond and give to the mixture proper molding and working properties. Practice will show the proper amount of plastic clay and hard shale to use to produce a mixture giving suitable working properties and yet a good product from the kiln.

Weathering, however, is not a panacea for clay ills; it will not solve the problems presented by all clays. When it is found that weathering does not improve the working properties of some clays in the bank, they should be avoided by the shovel operator. For example: There are cases where the trouble is caused by the mix containing too much sand; being a part of the overburden or found in pockets, or composing a vein of a sandy shale rock or quartz, the sand is allowed to enter unnoticed into the mixture of clays, causing the brick to check at the machine, due to a "short" mixture, and to crack in burning. The aging of the mix under these conditions would have very little effect, and the only way to overcome the trouble from this source is to be more careful in the selection and the mixing of the raw material.

ADVANTAGES OF CLAY DRYING UNAPPRECIATED

A very important step in the preparation of the raw clay is drying in case it is exceedingly moist. This is a process seldom employed, probably because clayworkers are unaware of its many advantages. To wet or damp clay can be charged the loss of many thousands of dollars each year. In some cases plants which have failed because of their inability to produce good ware might have been made paying propositions had they dried their clay before molding it.

The chief objection to clay-drying is the expense involved, but this expense may in many instances be earned many times over by the installation of a clay dryer which will insure a full capacity thruout the entire year. The advantages to be gained by continuous operation thruout the entire year are many, and include the reduction of overhead expenses, the holding together of the yard crew, which is very important at this time, and the profit gained on the additional output of the factory without increasing the number of men and amount of equipment.

The size of the material permitted to run into the pugmill has a very important bearing upon the qualities of the product obtained. With some clays best results are obtained by fine grinding; with others coarse grinding is desirable, and, again, another clay may require both fine and coarse ground particles to give sound brick. Thus, the screening of the clay in many cases is an important operation. If the clay is very wet it becomes sticky and often clogs the screen to such an extent as to lower its efficiency. Here, again, a clay dryer would be of much value.

The last place where the preparation of the clays which enter into the final product can affect the ware is at the pugmill. After we pass the pugmill the destiny of our product is molded, and while, by special drying, we can often reduce losses, and by special burning obtain certain good results, yet so serious a trouble as excessive lime or much cracking in drying due to too highly plastic a clay cannot be overcome. Owing to the irregular mixture of the materials their pugging is often a very difficult proposition. A good man at the pugmill is an asset. It is not unusual to see hundreds of brick or tile being shoved off the off-bearing belt because of being too soft. It takes a pretty good man to keep a constant quantity of clay in the pugmill and to keep it properly tempered. A variation in the moisture content of the clay, as well as a change in the quality of the clay mixture, must be carefully watched for so that the losses that might result from the change in conditions can be reduced to a minimum.

* * *

Oklahoma Delegation for Brick Pavement

One hundred and eight miles of pavement to be built out of the city of Okmulgee, Ohio, will be of brick construction as the result of a recent visit of a delegation of the Okmulgee Chamber of Commerce to Cleveland. The trip was made for the purpose of inspecting the brick roads in Cuyahoga County, which have a total length of several hundred miles outside of the city of Cleveland.

The committee consisted of T. T. Blakely, secretary and manager of the Okmulgee Chamber of Commerce; J. J. Moroney, editor of the Okmulgee Democrat; L. H. D. Cook, insurance man; and R. R. Tway, county engineer. While in Cleveland they were taken on trips of inspection of the brick roads by Will P. Blair, secretary of the National Paving Brick Manufacturers Association. They were much impressed with the monolithic type of construction, of which sixteen miles are now under construction east of Cleveland, and it is likely that their report will be made in favor of this type of construction.

* * *

According to a report coming from Cleveland, that city manufactures and consumes more brick than any other city of its size in the world. About 383,000,000 brick were used in Cleveland last year, most of which were manufactured there.

* * *

The Architect's Views on "Building Now"

During these dull times in most architects' offices, it will pay many of our members to expend a few hours' time in reviewing the notes taken of the lectures given at their University, on some of the fundamental axioms of political economy, states the "Monthly Bulletin of the Illinois Society of Architects."

The architect who thoroly understands the economic reasons why the prices of all commodities have advanced, and will continue to advance, and who thoroly understands the fact that as an economic necessity, the prevailing high level of prices must be maintained for many years, will be more apt to convince a client or a prospective client that he should BUILD NOW than will that architect who either is unfamiliar with the laws of economics, or if he is familiar with said laws, entertains even a faint hope that building costs will be materially lower than at present.

High prices will be an economic necessity for many years in order to support the enormous burden of the war debt. The cost of the war must be paid out of the incomes of the present as well as the future years. To lessen this burden prices must be maintained. For example: during the present fiscal year, the British government will have spent on the war a sum equal to the highest estimate of the total yearly income of the British people for any year prior to the war; but as prices have more than doubled since the start of the war, it will be seen that the cost of the war is only about one-half of the total maximum estimated income of the most prosperous year in their economic history.

In this connection, architects must recognize the fact that the present wages of building mechanics must be readjusted to keep pace with the increased cost of living. Rents will advance to keep pace with the increased cost of taxes and other fixed charges on property, so that in the end the various units of society will obviously be found to be occupying the same relative planes as before the war, but all will be doing business with a medium of exchange having an entirely different value and whose purchasing power will be found to be growing gradually less as its volume is increased by the exigencies of war conditions.

The editor can see nothing gained by waiting and trusts that all architects will unite in urging their clients to BUILD NOW.

* * *

Kansas to Build Seventy Miles of Brick Road

A seventy-mile stretch of brick highway, eighteen feet wide, and stretching from Horton south thru Holton and Topeka and on to Scranton, and to be built immediately.

This is the plan of the Capital Highway Association, formed yesterday in Topeka, with an avowed program calling for immediate work.

The new highway came into existence as the rain poured down at the fair grounds in Topeka recently, and hurried the good roads boosters in the People's pavilion to the few places where the water was not pouring thru the tent. Many of the men were many miles from home with little prospect of making the return during the day over muddy dirt roads, but this situation seemed only to spur them on to greater enthusiasm in the demand for 365-day roads.

Men representing all the affected counties declared their intention of starting the ball rolling without delay, Jackson reporting that the route thru that county had been mapped already, districts formed and petitions prepared for immediate circulation. Men were appointed, who will be responsible for similar activity in each of the other counties.

A white band with a capital "C" will be the distinguishing mark of the trail until the road is graded and the pavement is in place. Then no marker will be needed.

* * *

August Building Permits Decrease

Permits taken out for new building during August show a very marked contraction as compared with the same month a year ago, the total, according to reports published in "Dun's Review" from the building departments of 100 leading cities, amounting to $46,159,205, a decrease of 31.9 per cent. The falling off clearly reflects the abnormal rise in the prices of all kinds of materials, the shortage of cars, which has restricted the delivery of supplies, and the pronounced scarcity of labor. The two latter features are in part attributed to the building of the army contonments in many parts of the country, and, as they are now approaching completion, the release of a large number of cars and workmen is looked for, so that some relief in both respects is anticipated.

There is a very sharp falling off at New York city, the total being only $4,640,415, against $8,501,224, a decrease of 45.8 per cent compared with last year. Every borough suffers more or less contraction, but the loss is particularly heavy in March, where permits calling for the expenditure of $1,065,600 contrast with $3,151,500 in 1916. Only 29 of the 99 cities outside New York report a gain in new building enterprises, and the aggregate of all centers is $41,518,790, or 30 per cent less than the $59,289,468 of the corresponding month last year. Marked improvement appears at Cleveland, $4,579,215 comparing with $2,752,445, and good gains are shown at Denver Milwaukee, New Gedford, New Haven, Wilmington and a few others points, but, as a rule, the increases are insignificant. On the other hand, there is a drastic reduction in the value of permits granted at numerous cities, prominent among them being Akron, Boston, Buffalo, Chicago, Cincinnati, Detroit, Kansas City, Minneapolis. Philadelphia, Pittsburgh, San Francisco, St. Louis, Seattle and Toledo. The figures in detail are given below:

August	**1917**	**1916**
Akron	$860,917	$ 450 142
Albany	220,650	880,575
Allentown .	38,455	245.035
Atlanta	688,654	348,031
Baltimore .	773,364	753,534
Binghamton	99,614	296,754
Birmingham	112,255	248,471
Boston	1,314,129	3,896,878
Bridgeport .	353,527	643,304
Buffalo	1,210,000	1,756,000
Butte	115,265	206 860
Camden ...	124,983	125,000
Canton	110,310	309,805
Charlestown, W. V. ...	62,775	58,650
Chicago ...	4,277,650	5,783,000
Cincinnati .	926,795	1,328,490
Cleveland ..	4,579,215	2,752,445
Columbus ..	283,925	548,720
Dalas	145,159	310,499
Davenport .	130,000	79,180
Dayton	131,020	250,775
Denver	518,350	261,950
Des Moines.	110,850	139,183
Detroit	2,035,750	2,382,925
Duluth	461,733	287.590
E. St. Louis	60,572	157,109
Erie	230,399	313,785
Evansville .	51,384	137,866
Fort Smith.	208,900	11,400
Fort Wayne	289,550	266,240
Gd. Rapids.	141,299	438,650
Harrisburg	188,740	106,749
Hartford ..	422,065	547,390
Indianapolis	834,455	1,052,330
Jacksonville	209,166	199,735
Kan. C'y, Kan.	62,205	51,385
Kan.City,Mo.	603,340	1,211,225
Lawrence ..	70,200	68,200
Lincoln	89,580	266,130
Los Angeles	891,000	909,000
Louisville ..	64,945	321,550
Lowell	78,462	115,350
Manchester	43,195	164,806
Memphis ..	244,355	481,765
Miami	170,130	173,052
Milw'kee ...	1,050,461	802,167
Minneapolis	745,425	1,403,895
Mobile	17,250	450
Montgomery	8,964	26,040
Muskogee ..	8,600	39,200
Nashville ..	39,881	208,906
Newark	566,618	564,801
New Bedford	691,787	111,840
New Haven.	578,284	383,705

August	**1917**	**1916**
New Orleans	232,181	143,445
Oklahoma .	171,150	127,000
Omaha	775,625	652,835
Paterson ...	152,390	159,553
Peoria	112,080	431,300
Philad'phia	1,554,115	4,472,120
Pittsburgh .	707,520	1,442,467
Portland, Me.	54,610	64,765
Portland, Or.	332,600	497,000
Pueblo	19,530	3,945
Reading ...	37,975	112,500
Richmond .	111,624	359,566
Rochester..	384,641	557,730
Sacramento..	352,228	252,630
Salt Lake..	101,850	277,828
San Antonio	178,300	207,245
S. Fran'co..	1,302,000	2,103,000
St. Joseph..	79,680	65,995
St. Louis...	800,911	1,162,253
St. Paul....	421,845	741,785
Savannah ..	43,900	96,590
Schenectady	110,614	187,202
Scranton ...	54,233	155,117
Seattle	464,000	668,000
Shrevep't ..	16,660	84,294
South Bend.	218,223	131,997
Spokane ...	200,250	128,060
Springf'ld, Ill.	55,180	193,970
Sp'gf'd, Mass.	144,835	370,105
Superior ...	112,870	250,940
Syracuse ...	338,270	223,708
Tampa	21,500	117,985
Terre Haute	19,525	48,375
Tacoma	39,880	180,675
Toledo	375,534	1,348,197
Trenton	321,990	258,026
Troy	13,378	62,373
Utica	53,900	125,050
Wash'gton	1,038,480	1,192,778
Wheeling ..	24,915	60,471
Wilkes-Barre	79,908	64,314
Wil'gton, Del.	416,923	188,411
Wichita ...	80,655	36,675
Worcester .	531,640	629,176
Youngstown.	512,105	293,500
Total..	$41,518,790	$59,289,468
New York City—		
Manhattan	$1,065,600	$3,151,500
Bronx	789,375	925,832
Brooklyn..	1,302,000	2,159,610
Queens ...	860,095	1,167,582
Richmond..	623,345	1,096,700
Total...	$4,640,415	$8,501,224

	1917.	**1916.**
August, 100 Cities	$46,159,205	$ 67,790,692
July, 100 Cities	53,068,111	106,592,142
June, 100 Cities	58,410,217	89,015,113
May, 97 Cities	67,040,969	97,669,810
April, 100 Cities	77,283,900	85,779,104
March, 100 Cities	76,211,963	75,805,885
February, 100 Cities	52,076,389	51,778,391
January, 81 Cities	46,230,082	44,095,353
	1916.	**1915.**
December, 82 Cities	$58,827,827	$ 57,679,278
November, 90 Cities	62,531,756	58,111,873
October, 86 Cities	72,532,350	60,151,479
September, 90 Cities	58,380,133	61,023,645

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

How Do Your Costs Compare With These?

Are your operating costs reduced to a minimum or is one of your departments lagging behind? Here are some figures on operating costs in an eastern fire brick plant during the summer of 1916.

Grinding	$1.37
Moulding and Repressing	3.31
Setting and Wheeling	.71
Care of Kilns and Fuel Costs	.41
"Rousting Labor"	1.27
Handling of Clay	.16
Coal Handling	.10
General Works Expense	.78
Average Cost per M During One Month	$8.11

The above figures are from a plant where efficiency is the watchword and while physical conditions on your plant may raise or lower the cost in certain departments, the general run of costs should approach the above figures in value.

⁂

Handling the Steam Shovel

In digging clay by means of a steam shovel the natural tendency would be for the shovel to cross section the strata from top to bottom. The operation of the shovel should be governed so that it become full at the end of its stroke. In this way the shovel besides working efficiently, mixes the clay of the different stratum.

When the bank is very high or where the top earth is softer than that below, the tendency of the upper layer is to fall in large masses at intervals. This operates against the effort of obtaining an average and consistent mixture of clays at all times. To avoid this the door of the bucket should be left open and the machine used to slice the bank from bottom to top, allowing the loose material to fall, thru the bucket, in a pile at the bottom of the bank. This pile, since it contains clay from each stratum, will be an average mixture. This operation need not be repeated at every cut; rather it is employed just often enough to keep the fall of the bank straight and to prevent cave-ins.

The shovel may also be used to lift the material and drop it successively upon a pile before placing the clay into cars. This, however, is expensive and should not be done unless the quality of the clay demands it.

⁂

Why Clays Pug Differently

It is commonly known by paving brick manufacturers that some shales require inordinate pugging before they develop sufficient plasticity to permit the production of a perfect bar in the die of the brick machine. In fact, it is not uncommon to see a battery of two pugmills thru which the clay passes before it enters the brick machine proper. In the brick machine the clay receives further pugging before it issues as a clay bar from the die. It is also not uncommon to hear the manufacturers claim that they can not pug clay sufficiently unless they use hot water. Not all manufacturers have to resort to this extra care in the pugging process, for some shales develop plasticity with sufficient readiness to allow them to emerge from the first pugmill in a workable condition.

This difference in the working properties of shales is considered to be due to the fact that the grains of the clay are cemented by substances that differ in their solubility in water. It is now a well known fact that soils and clays contain soluble salts that are absorbed by, or, to use a more homely expression, smeared over, the particles, and are not easily extracted by water. It has been learned by experiment that clays can take on or absorb soluble salts from solutions and so retain these salts in their submicroscopic pores that they cannot again under ordinary conditions be dissolved from the clay.

The amount of water used in the pugging of shales is not sufficient to dissolve or loosen all of the cementing salts in a clay even by continued pugging, so that at best, only a portion of the clay particles are separated from one another, but the manufacturers must continue the pugging until a sufficiently large number of grains are separated to form a slippery medium, by virtue of which the unslaked or undisintegrated bundles of particles can slip past one another freely enough to permit a flowage of the mass under pressure.

⁂

Reviving a "Dead" Belt

When it is desirous to resurrect an old belt that has not been in use for a long time, soak it in kerosene for awhile, and then scrape off any loose matter remaining upon the belt. Next place the belt in sawdust over night and in the morning you will find it to be in condition to use again.

⁂

One Cause of Differing Burns

It is often claimed that two kilns, altho built on the same plant and from the same plans, require altogether different methods of burning to produce the same results. An analysis of the situation will reveal the following: These kilns are in the most cases built by bricklayers who do not know the first rudiments of brick manufacture and hence to expect them to watch carefully the dimensions and the constructional details of flues, fireboxes, etc., is utterly imprudent.

The importance of burning in the production of clay ware makes it imperative that kilns should be properly constructed; and this can only be assured when the superintendent assumes a careful supervision of the construction work.

⁂

Inefficiency of "Bawling Out" Workmen

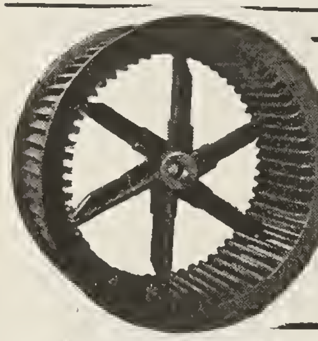
Nothing is more discouraging, more out of harmony with efforts for best results and high efficiencies, than a severe "bawling out" of an employe by some one in

You Should Know of the Many Advantages of
THE POTTS SPECIAL
A Soft Mud Brick Machine
Self Striking—Horizontal—for Common and Fire Brick
Ask Us for Details and Names of Users
C. & A. POTTS & CO., Indianapolis, Ind.

MORE WORKING CAPITAL
or do you want to expand, to improve a good plant? We specialize in clay plant properties, arrange for the issuance and sale of Bonds. We have rendered aid to many plants. Write us about your needs.
F. W. MORGAN & CO. 1st National Bank Bldg CHICAGO, ILLINOIS

UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket

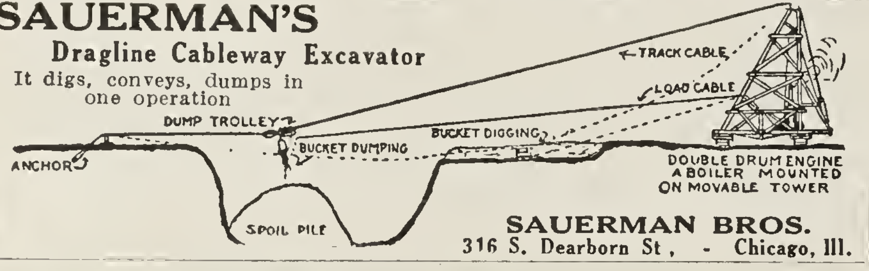
"The Chain of Double Life"
Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used. Sprockets, Buckets, Elevators, etc.—Send for Catalog
THE UNION CHAIN & MFG. CO., SEVILLE, OHIO



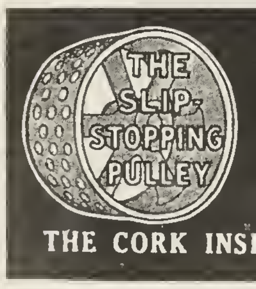
CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo, Michigan, U. S. A.

GOODRICH Belts
"Commander" Transmission and "Longlife" Conveyor Belts are unbeatable for the Brick and Clay industry.
THE B.F. GOODRICH COMPANY
Factories: AKRON, OHIO Representation Everywhere

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



SAUERMAN BROS.
316 S. Dearborn St, - Chicago, Ill.



CORK INSERT PULLEYS
BRAKE LININGS, CLUTCH FACINGS AND TENSIONS overcome the worst conditions and produce operating economy.
SEND FOR CATALOG
THE CORK INSERT CO., 168A Federal Street, Boston, Mass.

TO STOP advertising to save money is like stopping a clock to save time.
—*The Little News.*

authority. It is more discouraging if it occurs within the hearing of other employes.

Employes make mistakes, and so do you. Men may fail to understand you, but it may be your fault that they did not understand. In any event, you don't increase the employe's regard for you by "bawling him out" for he then grumbles to himself and to other employes, and probably calls you a string of hard names when you are out of hearing. He is losing time while he is grumbling, and so are his fellow-workers who are listening. If you've "bawled out" one man you probably have the others at some time, and they are stopping work to tell their grievances and to sympathize with the last victim of your harsh words.

Employes are men; if they are not, it's probably your own fault or the fault of some other boss for whom they have worked. You don't have to hire them, nor keep them if they don't satisfy you, but why disconcert your whole operating force by a practice that creates discord?

Discord is never efficient. Men don't accomplish best results when they are nursing a grievance. It is proper to correct mistakes, and to explain, but unless the workman is hard of hearing, don't yell at him. And don't allow any of your foremen to "bawl out" any of their men. A foreman who generates discord among the workers is as dangerous as any other agitator stirring up dissatisfaction. The result among the employes is the same. For efficiency it is necessary to have harmony.

If a foreman dislikes a man, it is a hundred to one that the man dislikes the foreman. No one works as easily, and peaceably, with as good results for a man he dislkies as he does for a man he respects, admires, and likes. Do you know any one whom you thoroly dislike who loves you?

If all the men dislike the foreman, and new men coming into the works grow to dislike him, there is just one thing to do—fire that foreman.

If he is the inventor of some vital part of your product and is so valuable that he cannot be dispensed with, promote him to the position of "advising manager," with a little increase in salary; but put a new foreman over the men. It will pay.

A foreman is a "teacher"—to instruct, correct and lead employes into bringing about the desired results. He should not be a driver. Whenever it is necessary to drive workers and abuse them and swear at them, or otherwise "bawl them out," there is something wrong with the men over them.

Just stop and think how you would like it if some fellow higher up than you would come in and bawl you out in the same way.—*Letson Balliet in "Power."*

* * *

Shall I Make or Buy Power?

Whether to purchase or make your power is a question the decision of which depends largely on the conditions surrounding the plant or particular industry under discussion. In a paper before the National Boot and Shoe Manufacturers' Association, John J. Gillespie gives his opinions upon the determining factors as related to his own line of industry.

"Are there any distinct advantages in purchasing the power and light and making your own heat, or are there any advantages in making your own power, light, and heat? If so, what are they?

"First, it is necessary in this rigorous climate of ours to have an adequate heating system for the comfort of your-

self and your employes. This is true whether you purchase your power and light—provided your factory is electrically driven from the local central power station—or whether you make your own power, light, and heat.

"I am going to arbitrarily state as the result of my observation that, during the entire commercial year, steam for heating and other purposes is the dominating factor; for, when you use not more than 5.4 per cent. of the steam for power and light, then the same, when viewed from this angle, may be treated as a by-product.

"It is true that machines requiring heat may be heated by electricity, the same being adequate. It is also true that this does not always prove economical unless you create conditions that make it so. It is also true that you cannot, unless you have a peculiar condition of affairs that you are bound to recognize and permit to exist, and that you know are not advantageous for the perpetuation and conduction of your business, afford to install low pressure boilers; for, if the machines are to be heated by steam, then you at least must have a boiler pressure of thirty-five pounds to take care of same.

"You may then properly ask yourselves how much more would be your steam consumption if you added to the heating of the building and the steam requirements of your machines, dryers, and so forth, power and light. For it is true that you may properly charge against yourselves, under ordinary conditions that are now existent, three and one-half cents per square foot for heating, alone.

"It is equally true that if you purchase your power and light from the central power station, you will then have to pay additional money for the same, and this, of course, is not a constant but a variant. So that, it would seem, where a manufacturer has a requirement of not less than one hundred horsepower, he may properly consider it greatly to his advantage to install his own power plant; and, if such installation is properly made, using high pressure boilers, steam flow meters, water-weighing and coal-weighing machines, and with a suitable engine—such as a turbine engine, for instance—he will make his own power, light, and heat, and steam—also electricity for heating purposes of his machines, dryers, and so forth,—at a cost not greater than one-half cent per pair.

"Compare this with an offer made by a central power station, some time ago, to a shoe manufacturer who was considering which he would better do—purchase his power, light, and heat from the central power station and heat his own building, or put in adequate boilers, purchase an engine and make his own power, light, and heat.

"The central power station representative offered to contract with him on a basis of two cents a kilowatt hour for power and light, he then having to supply himself with his own heat and steam for such purposes as he required same. Assuming that he worked three thousand hours, then his cost would mean that he would pay the central power station sixty dollars per kilowatt per year; and his heat expenses he would have to meet—for he would have to purchase his own coal, and so forth, labor, supply and upkeep, investment in equipment.

"He decided that he would put in his own power plant, and, after better than two years' experience, it has developed that he is supplying himself with power, light, and heat at a cost of forty-one dollars and fifty cents per kilowatt per year—a saving of nineteen dollars and fifty cents over and above the figures quoted him by the central power station representative. In addition to this, of course, he is self-sustained and independent. A power plant under the above conditions would be advantageous.—*Factory.*

CRESCENT
BELT FASTENERS
insure continuous operation of all machines with absolute freedom from breaking belt joints.
This means a big saving in both belting and time.
Write for Booklet
CRESCENT BELT FASTENER CO.
381 Fourth Avenue, N. Y., U. S. A.
ECONOMY

Do You Make Black, Grey or Speckled Brick?
If you do, you can get splendid uniform results, the kind your customers want, if you will use
CRIMORA
MANGANESE
It is always dependable, producing "repeat" colors kiln after kiln. Why not order a batch? Do it.
Crimora Manganese Corporation
30 East 42nd Street New York

Blasting without using the
CYCLONE DRILL
is like hunting deer with birdshot. You can't possibly get good results.
We are ready to offer you facts and figures to prove that the Cyclone Drill will soon pay for itself.
Ask for names of users and Bulletin No. 4
The Sanderson-Cyclone Drill Co.
ORRVILLE, OHIO

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.
Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.
Approved by Nat'l Board of Fire Underwriters.
HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

QUESTIONS

A Two Cent Stamp May Bring You Advice That Will Stop a Waste, Improve Your Ware or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

Designs New Dryer to Increase Efficiency

832—*Iowa. We are trying to increase the efficiency of our waste heat tunnel dryer, and are considering the possibility of using a system of recirculating waste heat from the kilns up and down thru our cars of drain tile. I am enclosing a rough sketch of the idea.*

Do you know of any plant which is trying something of this sort or has it in operation at present? If we could learn of some one else's experience along this line, either by correspondence or by a visit to a plant employing such a dryer, it would help us immensely. We hope that you will be able to render some assistance to us in this matter by advising us of the practicability of the dryer described and by informing us of its use in the industry.

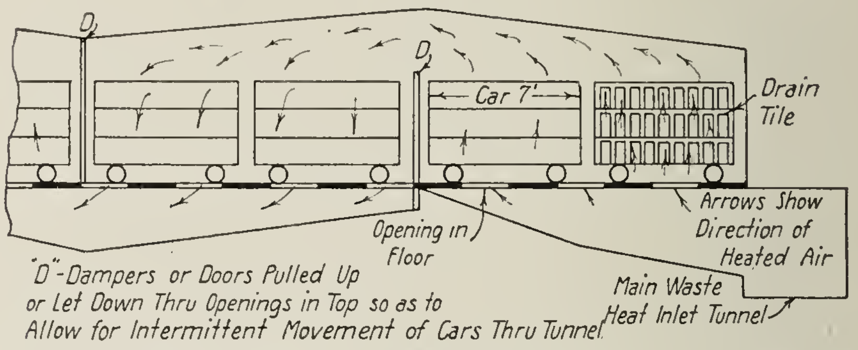

D
D
Car 7'
Drain Tile
Arrows Show Direction of Heated Air
Opening in Floor
Main Waste Heat Inlet Tunnel
"D"-Dampers or Doors Pulled Up or Let Down Thru Openings in Top so as to Allow for Intermittent Movement of Cars Thru Tunnel

Fig. 1. Sectional View of Waste Heat Tunnel Dryer Showing Proposed Changes and Results Expected.

First, to answer your question as to whether we know of any plant using a system such as you mention, we wish to inform you that we do not.

Our opinion of the matter is that to construct a dryer according to your sketch would probably not solve the problem of obtaining higher efficiency in the dryer. The tendency, in our estimation, would be for the air to follow the course of the heavy arrow in Fig. 2. Under the best conditions the circulation of waste heat gases would probably follow the lighter arrows. As the sketch shows this would leave areas (hatch-lined in the sketch) where there

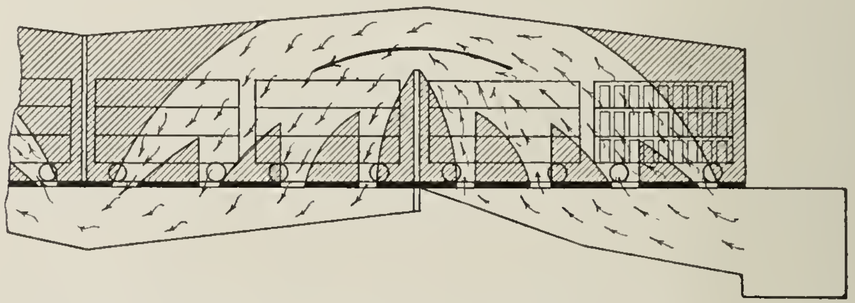


Fig. 2. Same View of Dryer, Illustrating the Course Which the Heated Air Would Pursue Under the Arrangement Pictured in Fig. 1. Shaded Portions Indicate Sections Which Would Remain Unaffected by Heated Air Drawn Thru Dryer.

Prevents Heat Penetration
SIL-O-CEL
PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway CHICAGO Monadnock Bldg. PITTSBURGH Oliver Bldg. LOS ANGELES Van Nuys Bldg. SAN FRANCISCO Monadnock Bldg.
Write nearest Office for Samples and Information

The "Rust Special" Clay Feeder

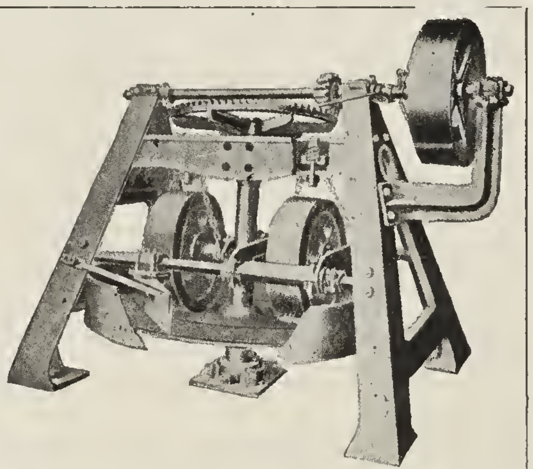
is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

THE EAGLE DRY PAN

Write for Prices

EAGLE IRON WORKS DES MOINES IOWA



Base Metal Couples and Low Resistance Instruments are absolutely unfitted for use on Clay plants.

We do not and we will not sell that class of equipment for measuring temperatures exceeding red heat.

STUPAKOFF PYROMETERS

for high ranges of temperature are equipped only with rare metal couples and high resistance galvanometers. They are dependable and we guarantee satisfaction.

The Stupakoff Laboratories
Pittsburgh, Pa.

and ANSWERS

Best Authorities in Every Clay-working Branch are Called into Consultation — Their Advice is Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

---

would be practically no circulation and hence wet spots would result.

By increasing the number of openings in the floor and regulating the size of these openings, a better distribution would probably be obtained. It might be advisable to construct dampers out of wire screens, the mesh to be determined by experiment. This would allow some air to pass horizontally and consequently would effect slightly better circulation, approaching that shown in Fig. 3.

The cost of excavating and reconstructing the dryer would be large and would be a very important consideration in deciding whether or not to follow the arrangement which you propose.

The foregoing is our opinion of the matter; the following is that of Professor Homer F. Staley, of the Ceramics Department of the Iowa State College, to whom we submitted the problem in the hope of obtaining additional information:

"I have never seen or heard of such a tunnel being operated, altho several times it has been suggested to me that such an arrangement could be made: It is my opinion that the bother of operating the sliding partitions and the leakage and stoppage of draft incident to their operation, would more than counterbalance the advantage to be obtained from their use.

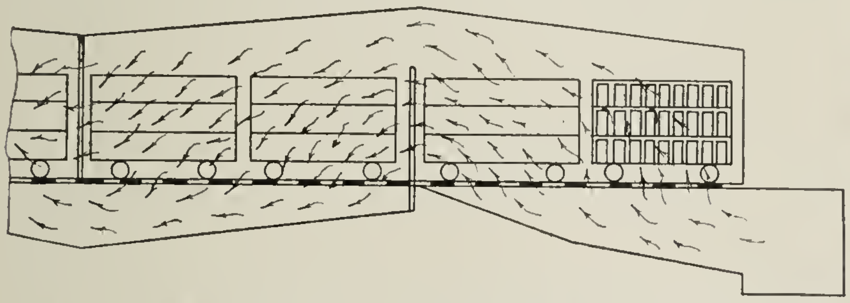


Fig. 3. This View Shows Somewhat Better Results to be Expected Thru the Use of Screen Dampers and an Increased Number of Holes in Dryer Floor.

"There is little difficulty in obtaining as nearly complete saturation of the air in a continuous tunnel dryer if it is sufficiently long and the supply of heat and air is uniform. This type of tunnel would not overcome the difficulty due to a non-uniform supply of hot air."

If any of our readers know of a plant which is using a dryer operated on the principle outlined in the above question, we would be grateful to them if they would inform us of its location and give us any other information which they may have in hand concerning its operation. The principle outlined is not a new one; on the other hand, it is one that has been exploited in connection with kilns as well as dryers. Consequently we are led to believe that some plant may be employing this method of drying their ware which has escaped our attention, and which would be in a position to give immeasurable aid to our inquirer.

Get This Can on TRIAL

Send for a Can Today

Keep your belts from slipping. Don't let them rot.

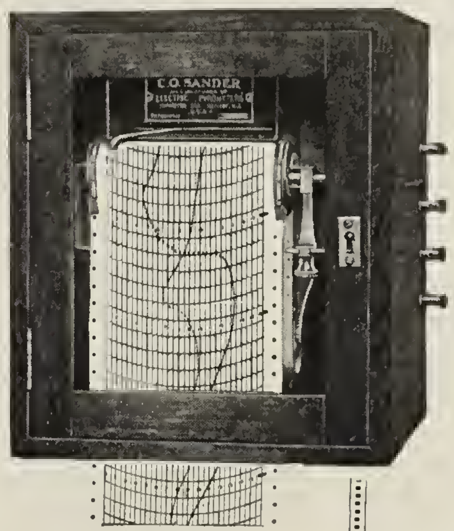
"SERO" Belt Dressing

makes them efficient.

"Sero" on your belts reduces the power consumption and prolongs the life of the belt.

Sero Specialty Co., Cleveland, O.

We also make "Sero" Gear and Cable Coating and Manila Rope Dressing.



SANDER PYROMETERS

Surprisingly low in cost, and yet well made, sturdy and accurate.

The smallest plant can use them efficiently and many dollars will be saved in coal and labor reduction. Ask how.

The Sander Instrument Co.
136 19th Ave. Irvington, N. J.

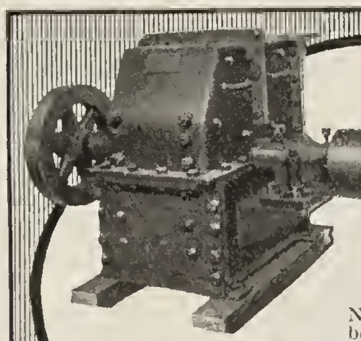
B. & B. Two-Bucket Aerial Tramway

requires but one man for its operation, reduces cost of hauling clay and shale to a few cents per ton.

Outline your haulage conditions and we will gladly estimate the cost and possible savings to you.

Ask for Catalog No. 16.

Broderick & Bascom Rope Company
St. Louis, Mo.



It will pay *You*

to investigate the superior merits of the

K-B Pulverizer

No matter what your experience may have been with other crushing machines, the K-B All-Steel Hammer Mill will probably show you something you haven't known about pulverizing at low cost.
Built for Service and Durability.

Send for catalog now

K-B Pulverizer Company, Inc.
86 Worth St., New York

Makes Assurance Doubly Sure

The Homestead Quarter Turn Valve installed with the Hovalco Valve, as shown, is a combination that will act as an additional safeguard on your blowoff lines. If any leakage should develop in the angle valve, the Homestead can be closed while the other one is being repaired. Ask us all about this "money saving pair." Catalog L sent on request.

Homestead Valve Mfg. Co.
Homestead, Pa.

They Do Produce Results

We refer to

Those little ads you have noticed in our Classified Ad Pages.

It is the decision of concerns who have used them. Try one.

Brick and Clay Record

Rino Lubricant

protects the metal gears and rope and reduces noise.

It is a heavy black adhesive compound, which will stay where it is put, and lasts longer than grease or oil.

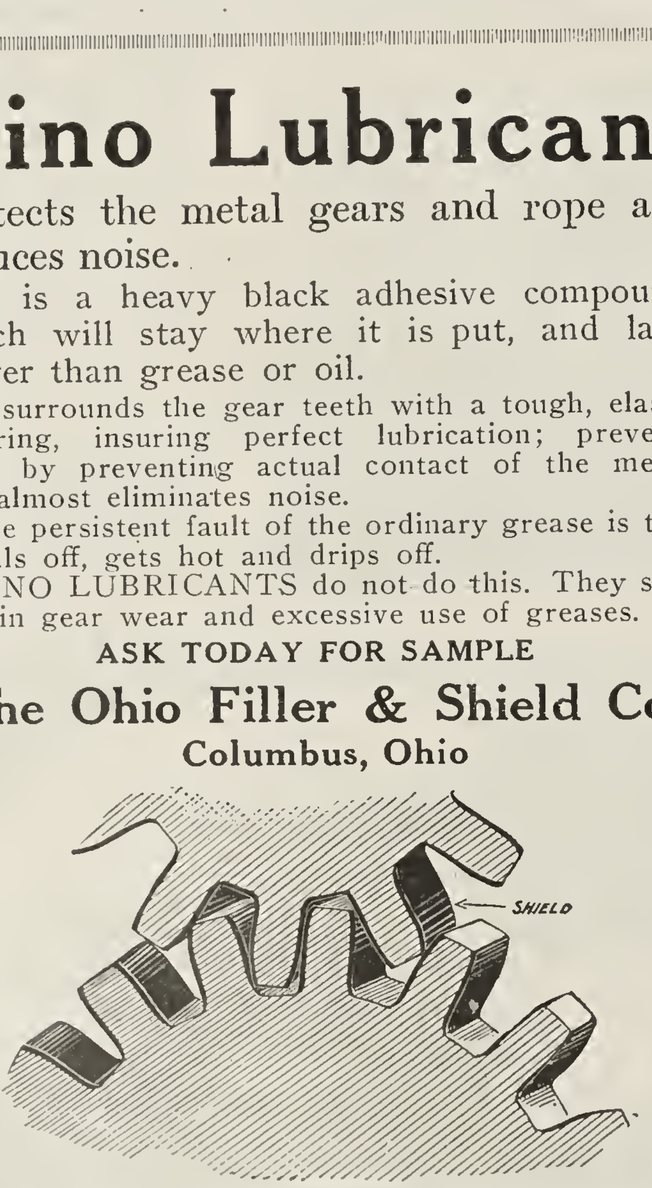
It surrounds the gear teeth with a tough, elastic covering, insuring perfect lubrication; prevents wear by preventing actual contact of the metal, and almost eliminates noise.

The persistent fault of the ordinary grease is that it falls off, gets hot and drips off.

RINO LUBRICANTS do not do this. They save you in gear wear and excessive use of greases.

ASK TODAY FOR SAMPLE

The Ohio Filler & Shield Co.
Columbus, Ohio



The LETTER BOX

A Place Wherein Letters
That Have General Interest Are Published and
Commented Upon

A. V. Bleininger Answers Correspondent

In order to refresh the minds of our readers of the contents of a letter appearing in this department in the September 11 issue, under the head "Stiff-Mud and Dry-pressed vs. Soft-Mud, Again," denying the value of conclusions drawn from the winning paper in the Second Ceramic Students' Essay Contest, we are reproducing again our critic's epistle. In this manner our readers will be made better able to digest the contents of the letter which we reproduce immediately following it, received from A. V. Bleininger, director of the Bureau of Standards, who acted as judge in the Ceramic Students' Contest.

If I had not put myself on record in your magazine by stating that the stiff-mud and dry-press method of brickmaking produced a denser and superior brick than the soft-mud method, provided the dry-press brick were properly made and properly burned, I would leave a radical theory to its blissful slumbers. Professor A. V. Bleininger has done much for the clayworking industry, and while the theory might be correct that a brick made by the soft-mud process would, under certain one-sided conditions, produce a superior brick to either the stiff-mud or dry-press systems, the conclusions drawn are of no practical importance. The foregoing applies to the feature articles on pages 299 and 399. Now, when we say "things being equal," when we burn brick made by the different processes in the same kiln with the same heat in the same time, DO THE DRY-PRESS brick get a square deal? Or the stiff-mud? The dry-press requires different treatment and more heat, which it did not receive in the test. It actually received only 1,700 degrees Fahr. After being made "rotten" and probably discolored by too rapid preburning and then only half burned, would you expect anything other than an absorbent brick. Things being equal in burning could not be taken otherwise than that the brick should be heated according to the amount of clay contained in it, and its ability to take the heat; for instance the stiff-mud requires more time in pre-burning and more heat than the soft-mud, and the dry-press still more, yet, as I understand the article, all brick were burned in the same kiln, and in the same time, with the same heat, approximately 1,700 degrees Fahr.

This article will be and has been read by practical paving brick men employing the stiff-mud process, and fire brick men making dry-press brick. It is also read by ceramic engineers. *And while it makes the unskilled laugh, cannot but make the judicious grieve.*

How many brickmakers know, as I do, that burning brick in a continuous kiln can be done with more system and the amount of fuel used can be cut down to nearer the required minimum than in any other kilns. I know, from my own practical experience, that in changing from the soft-mud system to the stiff-mud system that a superior brick is produced, also that the burning time is lengthened and the amount of fuel is increased to the proportional amount of clay in the brick. I know that a dry-press sample in this kiln would burn rotten. Therefore let us say:

"THE BURN'S THE THING WHEREIN WE'LL GIVE THE BRICK THE RING."

In reply to the above letter Mr. Bleininger writes:

Permit me to say a few words in answer to the critic of the paper by Mr. B. T. Sweely, who was awarded the *Brick and Clay Record* prize some time ago. My function

consisted merely in looking over the several contributions and I had nothing to do with the work involved nor the writing up of the report However, it seems to me that the author has carried out an interesting little investigation which gives numerical values ever so much more valuable than general statements. It is a contribution like many of the papers of the American Ceramic Society, contributing a bit of information which, tho not strikingly new, adds its share in weaving the fabric of more exact knowledge. I am afraid our good friend the critic, takes the application of the contribution too tragically.

In this case the principal fact brought out was that the amount of water present in the clays has considerable influence upon the resulting structure in that a large quantity draws together the particles more closely than would be the case otherwise. The result is a more compact initial structure and earlier vitrification. In a dry-press body the structure is granular and the necessary cohesion is brought about by firing to a somewhat higher temperature or by firing longer. That a difference in structure exists between products made from soft plastic and from a dust mixture nobody will deny. This statement is not at all prejudicial to dry-pressed building brick which we know are an excellent material for the purpose when well burned. On the other hand, soft-fired, dry-pressed brick are not as resistant to disintegration as soft mud bricks fired to the same heat and, of course, made from the same clay.

Honest criticism is certainly to be desired and is the only way of getting at the real truth, and for this reason, the contribution of the critic is to be welcomed, but it would have been better if it had confined itself to the exact facts of Mr. Sweely's paper.

As was stated in the September 11 issue, we believe that the subject up for discussion is an interesting one, and we would be more than pleased to open our columns for the expression of views upon it. The results obtained in Mr. Sweely's paper have served to crystallize a new theory; both followers and objectors will line up in favor of and against it. As a forum for debate upon the topic between the affirmative and negative factions, we suggest the use of this, the "Letter Box" department.

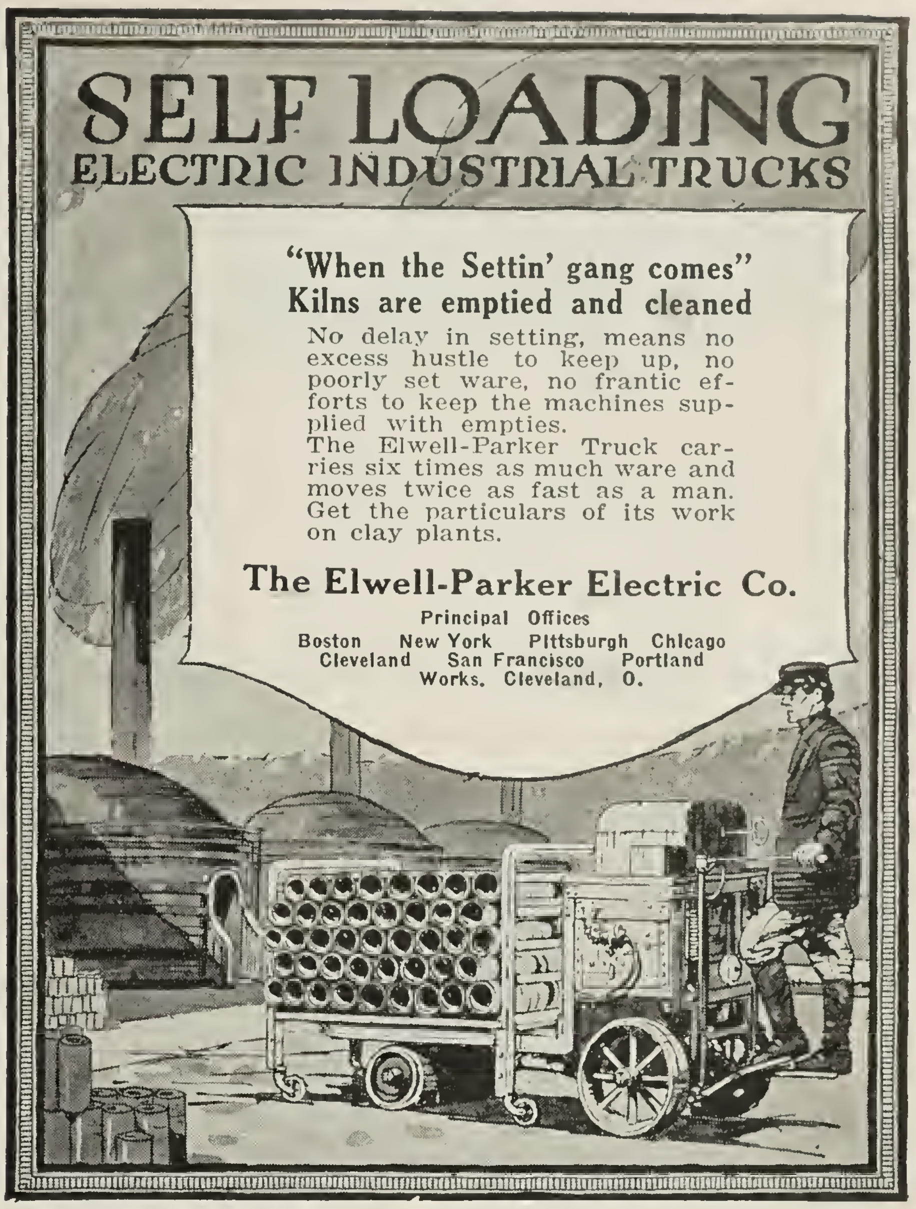
⁂

Building Permits High in California

That activity is being resumed in building operations in California is shown by the increase in building permits issued in the five largest cities of the state during the month of August in comparison with the preceding month. Los Angeles was the only city of the five that showed a falling off, but the gains made by the other four more than offset the one decline. In San Francisco the building department reported permits in the value of $1,217,691; a gain of more than thirty per cent. over July. In the case of Sacramento the gain was even larger than that, the permits for August being $352,228 in comparison with $65,298 for July. San Diego permits totaled $116,429 for August and $78,485 for July, while Oakland permits for August amounted to $388,159, against $345,085 for July. The report is hardly so favorable for the Northwest, as Portland, Ore., and Seattle, Wash., the two largest cities in that section, both showed a slight falling off in building operations. Portland's permits for August amounted to $332,600 against $358,955 for July, and Seattle's were $464,765 for August in comparison with $475,190 for the preceding month.

⁂

Albany's building permits for the month of August totaled $220,650 an increase over July of $100,000. Superintendent of the Building Bureau, John Fulton, believes the tide of more building has now set in and expects a decided boom in construction work in the capital district.



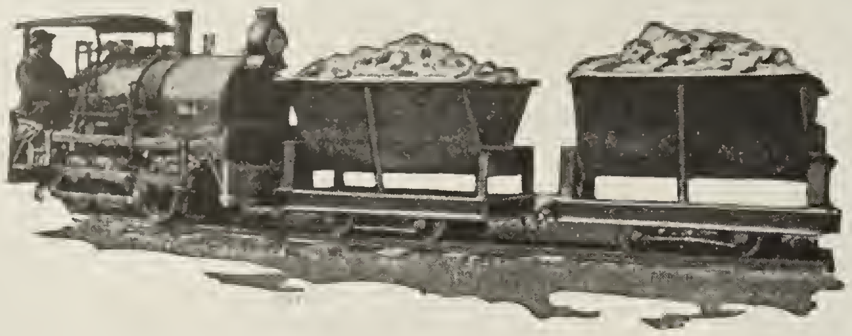
SELF LOADING
ELECTRIC INDUSTRIAL TRUCKS

"When the Settin' gang comes"
Kilns are emptied and cleaned

No delay in setting, means no excess hustle to keep up, no poorly set ware, no frantic efforts to keep the machines supplied with empties.
The Elwell-Parker Truck carries six times as much ware and moves twice as fast as a man.
Get the particulars of its work on clay plants.

The Elwell-Parker Electric Co.
Principal Offices
Boston New York Pittsburgh Chicago
Cleveland San Francisco Portland
Works. Cleveland, O.

WATT
CARS
"AT FIRST OR AT LAST?"
They stand for efficiency and durability. Ask for catalogues.
The Watt Mining Car Wheel Co.
Barnesville, Ohio, U. S. A.



Discard hand-pushing methods.

Sell your horses and mules—eliminate the barn, the feed, cleaning and veterinary nuisance. Make a bid for results and install the low priced

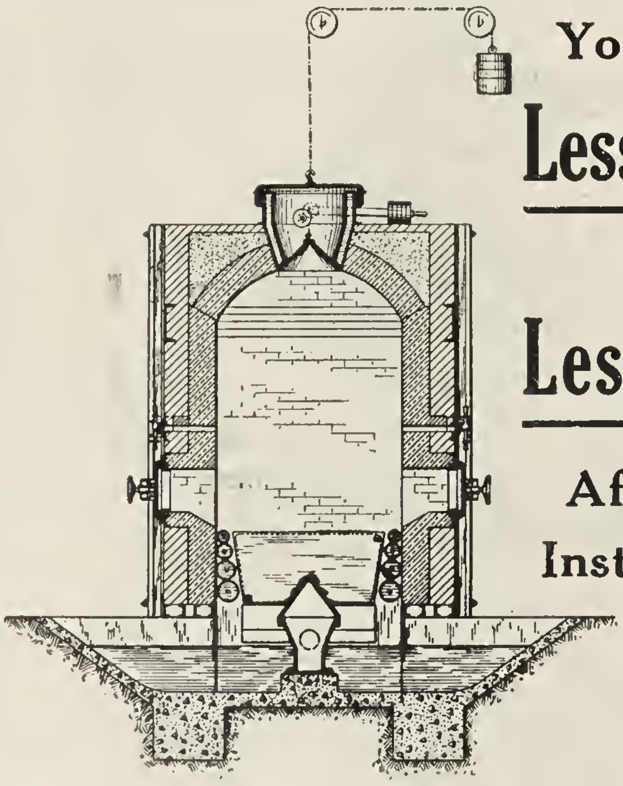
Bell Steam Locomotive

It Burns Kerosene Costing

9c per gallon, it requires no licensed Engineer, and it pulls a 50% heavier load than any other steam locomotive.

The BELL has a lower first cost and still does more work at a lower operating cost than any other type. Address the

Bell Locomotive Works, Inc.
30 Church Street New York



You Need

Less Labor

and

Less Coal

After the Installation of the

Richardson Gas Producer

(Patent Applied For)

The Ceramic Supply & Constr. Co.
Columbus, Ohio
Kilns Clay Machinery Draft Gauges

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

---

M. P. Post, of Post Brothers Tile Co., Commerce, Mo., has joined the Officers' Training Camp, at Ft. Sheridan, Ill.

A. B. Luten, of the Metropolitan Paving Brick Co., of Toledo, Ohio, was in Columbus recently and, while there attended the Grand Circuit races at the Columbus Driving Park.

W. G. Bohnsack, secretary of the Illinois Brick Co., Chicago, has been visiting in San Francisco; also W. S. Dickey, president of the W. S. Dickey Clay Manufacturing Co., Kansas City, Mo., and W. R. Coleman, brick manufacturer of Santa Barbara, Cal.

H. Watson, general manager of the Eureka Fire Brick Co., of Mt. Braddock, Pa., abandoned his business cares for about two weeks to take a pleasure trip to Chicago. While in Chicago Mr. Watson dropped into the offices of *Brick and Clay Record* on a friendly visit.

Charles Christopher Grube, of Springfield, Ohio, a retired brick manufacturer, died recently at the age of seventy-five years. Mr. Grube was born and raised in Clark County, Ohio, and with several brothers engaged in the manufacture of brick for many years. He retired from the industry about ten years ago.

The Belleville (Ill.) Brick & Tile Co. announce that after September 1, Anthony Ittner will have charge of the St. Louis sales and deliveries. An office has been opened in Room 1028, Chemical Building, at Eighth and Olive Streets. Benjamin F. Ittner, who formery was St. Louis manager, has resigned to take a position with the Selden-Breck Construction Co., which at present is doing work at Fort Sill, Okla.

J. J. Moroney, T. T. Blakely, R. K. Lavay, and L. H. D. Cook, of Okmulgee, Okla., and Mat Graham, of Kansas City, Mo., engineers and road commissioners, were in Paris, Ill., recently to inspect the new monolithic brick pavement in and around Paris. The visitors were guests of W. T. Blackburn. According to Mr. Blackburn, more visitors have come to Paris within the last year to inspect the brick highways than for any other one purpose.

Warren Griffiss, general manager of the Baltimore (Md.) Brick Co., had a mishap in his automobile on Sept. 21. Mr. Griffiss had just left his home on Eutaw Place when his automobile collided with another. The second machine swung Mr. Griffiss' car completely around, and he was badly cut and bruised. He was confined to his home for a while as a result of his injuries. Mr. Griffiss has a reputation as an organizer and an executive, and is one of the keenest observers of business conditions generally, and the brick business especially, in the East.

T. Robert Kane, a member of the firm of the Michael Kane Brick Co., of Hartford, Conn., has received a commission as second lieutenant in the new National Army and has been assigned to duty at Camp Bartlett, Westfield, Mass., as an officer of Company L of the 104th regiment. Lieutenant Kane is a native of Hartford and is twenty-seven years of age and since his graduation from Worcester Academy a few years ago has been associated with his father, Michael Kane, in the brick manufacturing business at Hartford. He received his commission after training for three months at the Plattsburg officers' reserve training camp.

Leo M. Parsons, secretary and treasurer of the Tyler Building Supply Co., Louisville, and one of the best known brick and clay products salesmen in the Central South, went to Cincinnati on September 11. On the following day his friends in Louisville received announcements of his wedding to Mrs. Gail Cornelius, of Pleasant Ridge, Ohio. After their return from their wedding trip Mr. and Mrs. Parsons will reside in Parsons' Place, near Cherokee Park, Louisville. Mrs. Parsons is an educator of note and was a member of the domestic science department faculty of the Ohio Mechanics Institute, as well as a lecturer on food economics. Mr. Parsons, whose company represents the Hydraulic Press Brick Co. and the Atlantic Terra Cotta Co. in Louisville, is very largely responsible for some of the excellent face brick and terra cotta structures in Louisville.

Daniel E. Childs, president of the Hancock Brick and Tile Co., of Findlay, Ohio, died at his home in Findlay on September 6; death coming as a result of a prolonged illness due to Bright's disease. Mr. Childs has long held a very prominent position among the clayworkers in the Buckeye State. He was born in Oberlin, Ohio, in 1843, seventy-four years ago, and settled in Findlay in 1887, where, in partnership with Dorney and Murray, he manufactured brick and tile. Later he purchased the interests of Mr. Dorney. In 1892 the Findlay plant was destroyed by a fire in which Mr. Murray lost his life. Mr. Child then became sole owner of the holdings, purchasing the interests of the Murray heirs, and operated the rebuilt plant until 1903, when he bought the plant of the firm of Dorney and Harris. Three sons, D. Earl, Roy B., and J. Leo Child, were associated with their father in the Hancock Brick and Tile Co.

Arkansas

The Burke brick plant of Fort Smith, Ark., has enjoyed a very prosperous summer. Orders keep piling in from five different states for the company's products. A new kiln is now being built upon the plant bringing the battery up to twenty-two kilns.

California

After more or less delay, surveys are being started for the sewer system at Camp Fremont, the army cantonment, situated a few miles south of San Francisco.

One of the biggest brick contracts being figured on at this time in the San Francisco Bay district, is a large addition to the Union Iron Works, in Alameda, plans for which will soon be ready for the contractors. It is estimated the proposed structure will require around 700,000 brick. This week the contract was let for the construction of two two-story brick factory buildings and another contract will be awarded immediately for a third brick factory building.

Speaking of the brick situation, W. S. Hoyt, of the United Materials Co., San Francisco, Cal., says the demand has held up remarkably well this summer, considering the apparent lack of activity in the construction of new residences, apartment houses, and family hotels. The redeeming feature, in his estimation, is the large amount of heavy construction in progress or to be started within

A BRICK STORY
Perhaps it fits your case

Every brick that is bought from your plant to go into another man's wall is whose brick?

YOURS ALWAYS

Your future, the future of your plant, your reputation, is dependent on the action of that brick in every wall that you sell.

If it stays always a good brick in color and body, it is a perpetual advertisement beautiful —for you.

But, if it scums, if it shows up grey on a clear deep red, if it assumes in a few months a dirty-yellow-grey-whitish indescribable color, your reputation, your business is hurt.

It is your fault—yours alone—a result of carelessness or ignorance, or both, which does not mend matters.

The cure, the preventative absolute of scum is

ROLLIN'S BARIUM CARBONATE

and if you will write us, we will tell you all about it, and how easy and surprisingly cheap is the process applied at your pug mill.

ROLLIN CHEMICAL COMPANY
Inc.
Charleston, West Virginia
General Sales Agents
National Aniline & Chemical Company
244 Madison Ave., New York City

Many of the progressive, profit-paying clay-product plants are **standardizing** by adopting

HETTRICK RED STITCHED CANVAS BELTING

They know it is absolutely dependable, regardless of the conditions under which it is used.

They also know that greater efficiency in the operation of machinery is obtained by using the same high quality of belting for conveyors, elevators and power transmission.

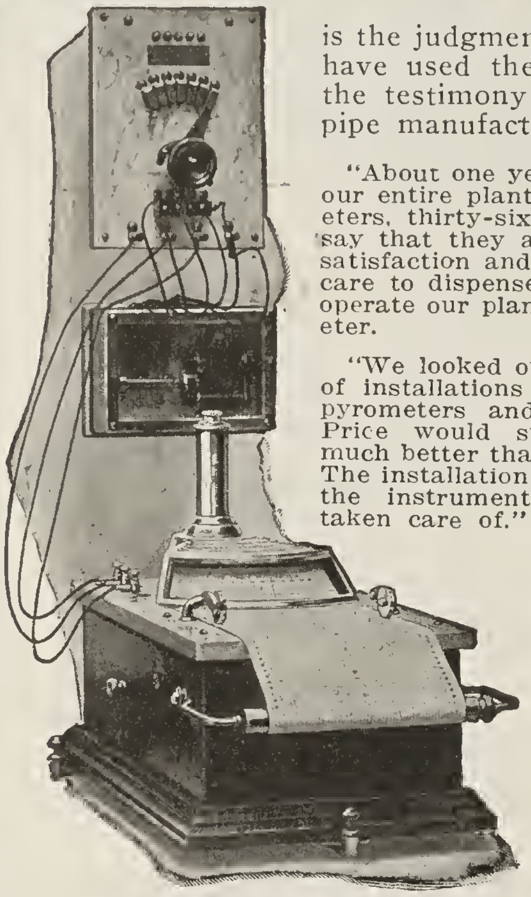
"Hettrick" Beats Them All"

Let us prove it to you?

Hettrick Mfg. Company
Toledo, Ohio

The best measure of the worth of

PRICE PYROMETERS



is the judgment of the men who have used them. Following is the testimony of a large sewer pipe manufacturer:

"About one year ago we equipped our entire plant with Price pyrometers, thirty-six kilns in all. I can say that they are giving us entire satisfaction and that we would not care to dispense with them and to operate our plant without a pyrometer.

"We looked over quite a number of installations of other makes of pyrometers and decided that the Price would suit our conditions much better than any of the others. The installation is quite simple and the instruments are very easily taken care of."

Price Pyrometers are guaranteed to save coal, save time and produce better ware. We want to tell you more about them.

Write us now.

THE PRICE ELECTRIC COMPANY
12367 Euclid Ave. Cleveland, Ohio

You won't have to worry about competition if you treat your clay with

R. H. Precipitated Carbonate of Barytes

You can safely guarantee that your brick will be

Scum-Proof

You can get a higher price and influence architects to specify your product because Efflorescence is prevented absolutely.

But insist on the R. H. BRAND—it's dependable.

We have a complete line of high grade chemicals for the clay industry.

The Roessler & Hasslacher Chemical Company
100 William Street New York
Chicago, Ill. Cleveland O. St Louis, Mo.
Kansas City, Mo. San Francisco, Cal. Philadelphia, Pa.
Boston, Mass. New Orleans, La
Cincinnati, O.

the next few weeks, principally warehouses, factories, and the like, which require a large amount of brick.

A large amount of paving brick is being used in San Francisco street work at present. Several contracts have been awarded during the past month, and now proposals are being taken for the improvement of Greenwich Street, between Kearny Street and Grant Avenue, the specifications calling for a fourteen-foot central strip of vitrified brick. Similar proposals are made in specifications for improving Allison Street, between Brunswick and Morse streets, and Forester Street, between Judson and Staples.

As far as the San Francisco brick market is concerned, there has been a slight stiffening in prices during the past fortnight, both in face and common brick, and further advances are predicted. The greatest difficulty confronting the manufacturers continues to be the shortage of men in the yards. Some trouble is also experienced in securing cars. The coal situation comes in for a share of attention also, altho good many of the plants in this vicinity burn oil: The latter is not much to their advantage at this time, however, as the price of oil has advanced about one hundred per cent. in the last few months. It is understood the yards using coal are fairly well supplied, the managements having anticipated their needs earlier in the year.

According to John T. Roberts, manager of the Stockton (Cal.) Fire & Enamel Brick Co., two additional kilns are to be constructed at the company's plant within the next sixty days, preparatory to starting the manufacture of magnesite brick on quite an extensive scale. The company has been contemplating manufacturing magnesite brick for some time, and has been doing considerable experimental work. It will commence the manufacture of the new produce as soon as the necessary manufacturing facilities can be provided for the expansion of the business, which, according to predictions, will be about the first of next year. According to Mr. Roberts, California magnesite will be used. He calls attention to the fact that all the California magnesite mines have practically their entire output contracted for months ahead, so that it is difficult to secure large quantities at present unless contracts were made some time ago. Most of the California magnesite, as well as that mined in the vicinity of Spokane, Wash., is being shipped east in the raw state. Mr. Roberts reports a heavy demand for fire and enamel brick.

Colorado

Messrs. Ervin and Lindsey, of the Denver (Col.) Pressed Brick Co., journeyed over to Castle Rock, Col., recently to look over the plant at that point. They are authority for the statement that quite extensive improvements will be made during the winter. A new dryer will be constructed and machinery will be overhauled. At present a new dry pan is being installed.

Georgia

The Dublin (Ga.) brickyards has just turned out its first brick since being under the management of its new owners, the Dublin Lumber Co. All machinery on the plant, which was purchased several months ago, has been overhauled, and a great deal of rebuilding of kilns, tramways, sheds, etc., was effected before the plant was put into operation. The plant is equipped to turn out 40,000 brick per day.

Idaho

Articles of incorporation of the Utah Fire Clay Co. have just been filed at the county clerk's office in Pocatello, Ida. The company gave Salt Lake City, Utah, as its principal place of business and the manufacture of brick, stoneware, and pottery as its purpose. The concern is incorporated for the sum of $200,000, which is divided into 2,000 shares of $100 each. The officers of the company are: James E. Clinton, president; W. H. Reed, vice-president; T. R. Ellerbeck, secretary, and Lewis S. Hills, treasurer, all from Utah.

Again we hear from that live wire, new-born concern out west—the Moscow (Idaho) Fire Brick & Clay Product Co. A letter received from Tom Hall, superintendent of the plant, reflects the activity being enjoyed by the Idaho company. The Moscow Fire Brick & Clay Product Co. has been awarded the contract for material to be used in the construction of buildings at the Idaho State University at Moscow, for which Moscow reds will be supplied by the company to the number of 100,000. In addition, about 150,000 kiln run commons will be supplied. Another order calling for 100,000 brick, part of which are to be Moscow dark reds, has been received by the company, this material to be used in the construction of a manufacturing plant going up at Moscow. Brick are also being furnished for the construction of a packing plant being erected at that point. According to Mr. Hall, the city of Moscow is experiencing a boom in the construction of brick buildings, which is proving profitable for brickmakers in that territory. The Moscow Fire Brick Co. has closed its books for any further orders for building brick. Owing to the increased demand for fire brick the company will, in the future, limit its production to this material.

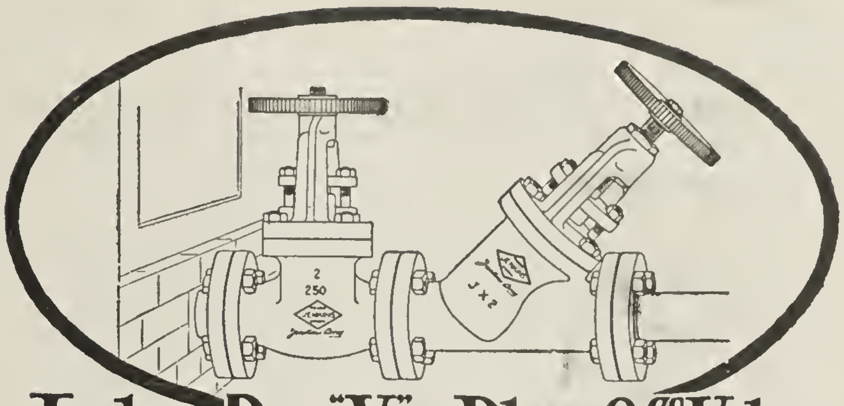
Illinois

Fear, and almost the certainty that much of the paving work, which has been undertaken this summer, will remain unfinished for the winter and block traffic on some thoroughfares is causing the city officials of Belvidere, Ill., some concern. The delays in some of the work is due to the inability to get the necessary brick for the work, according to the contractors.

The board of supervisors of Freeport, Ill., has designated the type of material for the next state-aid road to be built on the Cedarville Highway, and for which the state and county has already provided funds. The roadway will be of brick, ten feet wide, with three-foot shoulders of local stone or gravel. The pavement is to be placed at one side of the road, so as to permit about a twelve-foot earth road on the other side.

The receivership of the Banner Clay Works, of Edwardsville, Ill., is rapidly nearing an end. The report by Charles A. Bartlett of the receiver's sale, recently conducted by him, was approved in the circuit court by Judge J. F. Gillham. The plant, representing an investment of $150,000, was sold for $15,000 to Henry Meyer, of St. Louis, Mo. Mr. Bartlett was authorized to make the necessary receiver's certificate turning over the property to Mr. Meyer. It has not been made public what Mr. Meyer intends to do with the property, altho it is expected that it will be sold.

Despite the fact that building in Chicago is at a standstill, and the collateral industries stagnant, some very attractive orders appear on the books of the Chicago office of the Hydraulic-Press Brick Co., of which W. P. Varney is manager. At the present time the company is supplying brick



Jenkins Bros. "Y" or Blow-Off Valves

AN EXTRA Heavy Iron Body Y Valve bolted to an Extra Heavy Iron Body Gate Valve, as shown, produces a leak-proof boiler blow-off outfit which conforms with the latest practice, and cannot be surpassed in safety or durability.

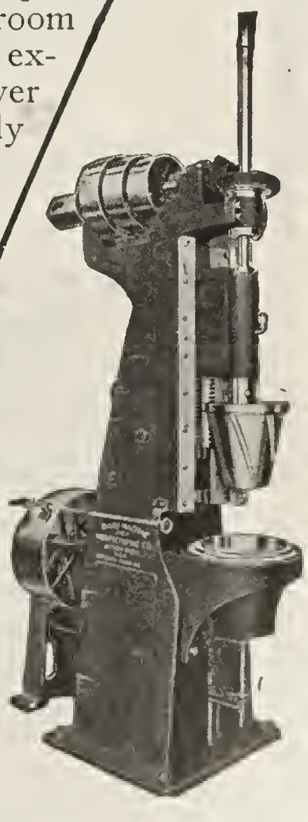
When open, the valves present an unobstructed straightway passage. There is no tendency for scale or mud to lodge and clog the flow. Water hammer, chattering or sticking will not occur.

In addition to blow-off service, the "Y" Valves are specially suitable for handling muddy or gritty water, and thick fluids.

REG. U.S. PAT. OFF. TRADE JENKINS MARK Jenkins Bros

Jenkins Bros.

80 White Street, New York. 524 Atlantic Avenue, Boston.
133 N. 7th Street, Philadelphia. 300 W Lake Street, Chicago.
Jenkins Bros. Limited, Montreal, Canada, and London, E. C. England.



A bi-product that is profitable

Place the machine off in one corner of your plant, and let it absorb the spare time of your machine room men. They soon become expert, and a stock of flower pots quickly collects, ready for the kiln.

It is almost pure velvet—a bi-product—a sure seller with a manufacturing cost low enough to insure a goodly profit.

Send us sample of your clay and let us show you what our flower pot machine will do.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.

The Minimum Gain

They pay for themselves in one year and in addition will save you $300.00.

Cyclone Boiler Grates

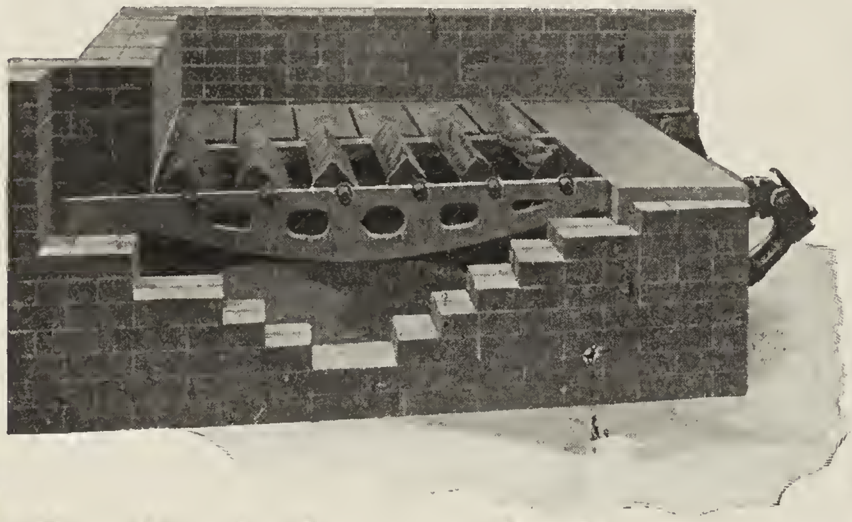
are sold to you with a guarantee that they will save 10% of your coal bill and on 90 days' trial.

This guarantee and trial offer prove absolutely that we know these grates will do as we say they will do.

They-will-save-you-big-money. It is Guaranteed.

Get the details from the

Cyclone Grate Bar Company
Buffalo, N. Y.



Gold Medal Award

Panama-Pacific Exposition
for

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Their Merits are Vouched for by
Hundreds of Satisfied Users
Ask for our New General Catalog No.8

THWING INSTRUMENT CO.
3336 Lancaster Ave. - Philadelphia, Pa.

for two one-million dollar apartment houses, each calling for 300,000. In addition to this, it is filling an order received from the Clearing Can Co. for 400,000 builders of the paver type, this order to eventually consume 1,500,000 brick. The cessation of residential construction, according to Mr. Varney, is chiefly responsible for the slump in the demand for face brick. While the value of building permits is about fifty per cent. of normal, they call chiefly for industrial construction which consumes much less face brick than does smaller work; hence, the demand for face brick is about thirty per cent. of normal. Due to the prosperity of the rural communities, Mr. Varney states that an exceptionally large amount of work is going on in the smaller towns. The affluence of the farmer has been passed on to the town merchants and business men with the result that there is a large amount of new construction as well as reconstruction work going on. For the same reason, the construction of schools and churches in small towns has received great impetus.

Indiana

The Clay Products Co., of Brazil, Ind., has begun the building of a new town south of Brazil. All of the houses, which will be occupied by the employes of the company, will be modern bungalows of hollow tile.

Kentucky

Clay products of various kinds were represented in the exhibit of the Department of Minerals, at the State Fair held recently in Louisville, Ky.

An ordinance has been introduced in the General Council of Louisville, Ky., requiring the elimination of privy vaults in sewered districts and the connection of every occupied building with a sewer. This measure has resulted from the work of federal health experts in Louisville and is expected, sooner or later, to stimulate the demand for sewer pipe for making connections to the sanitary sewers.

There is a fine amount of enthusiasm among the members of the recently organized Kentucky Clay Products Association. This is proved by the way in which the dues are rolling into the office of the treasurer, James T. Howington, of the Coral Ridge Clay Products Co. Mr. Howington said that he had "a lot of money in the bank" sent in by the members and that more is coming. No further meetings of the organization have been held since it was formed, altho the executive committee is making preparations toward that end.

"We are 'almost a brickyard' now," is the way A. F. Kleymeyer, secretary and treasurer of the West Point (Ky.) Brick & Lumber Co., referred to the progress the company is making in the reconstruction of its plant. The machinery equipment was renewed last year and this year has been given over mainly to the construction of six new thirty-two feet kilns. The plant, when the improvements are completed, will have a daily capacity of 30,000 stiff mud brick, face and common. The company is now making and shipping in somewhat limited quantities; it enters the Louisville market and disposes of its whole output without the least trouble.

Another week or so and the P. Bannon Pipe Co., of Louisville, Ky., will have completed deliveries of sewer pipe to the Federal Army cantonment at Louisville. The government's work has been completed for some time and deliveries are now being made for a sewer being constructed thru a part of the county, indicated by government representatives. Completion of the contracts for this work finds the Bannon Company with a gratifying accumulation of orders for several kinds of clay products which were held up when the plant was going full time on camp contracts. The customers of the company, with hardly an exception, agreed to wait until these orders could be taken care of before pressing their own demands. A. P. McDonald, sales manager of the company, reported foreign business heavy, altho local sales are light. The company has begun deliveries of tile to a new garage and continues delivering tile to the Louisville Public Warehouse.

Maryland

The Independent Brick Co., which had a large plant on the Philadelphia Road, near Baltimore, Md., has been dismantled and sold at auction. It had a yearly output of about 11,000,000 brick.

Massachusetts

Early closing of a number of Massachusetts brick yards is in prospect. Although manufacturers generally continue to be optimistic about business conditions it is admitted that the market is not so firm as it has been during earlier months of the year. There are still some contracts in prospect but delays due to shortage of help and other conditions hinder their execution.

Missouri

H. H. Crowell, sales manager of the Hydraulic Press Brick Co.'s office at Kansas City, declares that the business of late has been heavy indeed. The company has been furnishing brick for several of the large buildings under construction here at the present time. The plant of the company at Diamond C Station has been operating closely to capacity during the past month.

The price of common brick at Kansas City has been increasing steadily for the past three months. The increase in prices as announced by most of the companies average about twenty-five cents per thousand each month. Business despite this fact, has been good. Prices of hollow building tile have also been increasing steadily from five to ten dollars per thousand each month.

The new plant of the Kansas City Brick Co., at Vale, Mo., has been completed and is now in operation. It is understood that sales offices will be opened in the Reliance Building. F. C. La Fountain, of the Reliance Brick Co., who is interested in the new concern, recently made a trip to Vale, and reports that the plant is one of the most modern in that section of the country. It has a daily capacity of 50,000 brick.

The Western Paving Brick Manufacturers Association, with offices in the Dwight Building, at Kansas City, Mo., reported at its last meeting that the plants of all members of the association were busy at the present time. Delayed shipments have of course had an effect upon the business at the plants, but in the main they have been moving forward nicely. Many of the plants in Kansas have orders for brick for southern states that will keep them busy for several months.

The Walter S. Dickey Manufacturing Co., Kansas City, Mo., has been exceptionally busy. When the company first received the orders for the material for the army cantonments in this district all other business was put

Marion
Steam Shovels, Dredges, Draglines and Kindred Machinery

IT was no joke—digging tough, lumpy shale like this, and the Moberly Paving Brick Company, Moberly, Mo., really couldn't blame its pit men when they seized every excuse for laying off the job of loading it by hand.

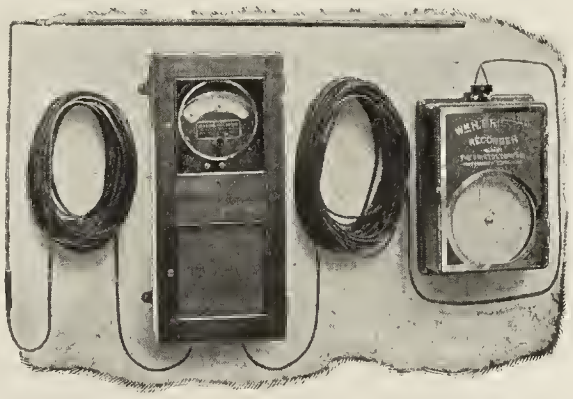
But as that didn't make up for irregular production, the Company bought a "Marion." Immediately, a change!

"MARION" NEARLY DOUBLED THIS FIRM'S OUTPUT, WHILE REDUCING HAND LABOR

—effecting an increase from 40,000 "Missouri" Brick per day, to a capacity of 75,000 per day, with fewer men in the pit.

Perhaps we can help effect such economies in *your* plant. Write us the particulars; no obligation.

The Marion Steam Shovel Company, Marion, Ohio
Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle
ESTABLISHED 1884
220



TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.
RECORDING PYROMETERS
BRING THE KILN INTO THE OFFICE

—right to the Superintendent's desk, giving him more time to do brain work.

The recorders bring him records in permanent form of the temperatures at the kiln. He can compare today's temperatures with that of yesterday, a month ago, or a year ago.

Down at the kilns an equal number of Bristol Indicating Pyrometers act as a guide for the burners. Team work of this sort eliminates all guess work and the resulting inefficiencies.

Suppose you allow us to show you how you also can increase team work and efficiency by the use of Bristol's Recording Instruments.

Write for Bulletin 163.

THE BRISTOL COMPANY, Waterbury, Conn.
Branch Offices:—Boston, New York, Pittsburgh, Chicago, San Francisco

aside. Having completed the work on government orders the company now is extremely active on work that had to be delayed in favor of the government order. The yards about the city are well supplied, however, and the company is again making shipments without delays.

The fuel situation in Kansas has hit the brick manufacturers a rather severe blow and coupled with labor difficulties, it is responsible for the increase in the price of brick in that market. The coal operators have been steadily refusing to renew old or accept new contracts, pending the outcome of the federal fixed prices. In Kansas the federal commissioner of fuel, Harry Garfield, recently granted a concession to the operators inasmuch as the federal quotation on Osage Coal which was $2.80 per ton has been increased to $3.75. Had not the brick manufacturers been equipped with many big orders, it is more than likely that several plants would have been forced to close under the existing conditions. With such increases in fuel and labor that the manufacturers in Missouri and Kansas have had to contend with, it is without question that a fair profit could not possibly be made without increasing the price of brick. On the other hand building has increased so rapidly that the demand is fast equalling the supply on this market.

Montana

A 160-acre tract of land lying just west of the city limits of Havre, Mont., is being developed for the manufacture of brick. A survey has recently been made of this tract and experts estimate that there are twenty acres of the tract containing high grade clay. The clay deposit, it is said, is estimated to be from 1,000 to 1,400 feet deep.

New Jersey

Along the Hackensack the yards are burning small quantities of brick. Not one is operating to anything approaching capacity, with the possible exception of the Hackensack (N. J.) Brick Co. That firm is reported to be the only one which has managed to keep up its output to about normal this season. The labor situation is very serious. Not half the yards can find more than twenty-five per cent. of the men required to keep the yard in operation and the price of available labor is so high that conservative manufacturers do not feel as though thep can afford to meet it. The majority of yards will get out the burnings now laid up in arches and then close for the winter. Scarcity of fuel has been a factor this season, but coal shipments have improved of late and they seem to be fairly liberal at present.

New Mexico

The Ancho (N. M.) Brick Co. has purchased the old county courthouse at El Paso, Tex., and is shipping the brick obtained in demolishing this building to Ancho. It is the company's announced intention to confine its future operations to the manufacture of fire brick.

Ohio

Despite the building slump, which has become widespread, there is still a fairly good demand for common brick in central Ohio territory. There is considerable factory construction going on and that provides a market for common bricks. The price continues to range between $10.50 and $11.50.

The Universal Pipe & Tile Co., of Tiffin, Ohio, is a new corporation. Papers were filed with the secretary of

Brickyard Bill Says:

"Uncle Sam's army off'cers has sure got some man's-size job, makin' a uniform high-grade product out o' all them diff'runt v'rieties o' green m'terial. But it kin be did. Th' Standard Brick Drier's been a-doin' it f'r thutty years."

The Flexible Heating System of

The Standard Drier

makes it applicable to ALL clays and ANY steam conditions. There is nothing theoretical about The Standard Drying System. The piping is applied in the manner that our long experience has demonstrated to be most efficient in meeting the requirements of the various natures of clays. The heating apparatus is FITTED to the NEED in every case.

Write for complete description and free estimate. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.

Cleveland, Ohio

Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

state calling for an authorized capital of $20,000. It is proposed to make pipe and tile. The incorporators are Fred J. Baumgardner, E. G. Staley, George N. Young, T. M. Young and John W. Morrow.

The appointment of the federal road fund, among the various states entitled to federal aid in constructing highways has been made for 1918. Ohio is awarded the sum of $558,043. This will be increased by state aid and will mean a large amount of money to be spent for road improvement during the coming year.

The Unitile Co., of Columbus, Ohio, has been incorporated with a large capital for the purpose of manufacturing tile and brick inserts. The factory is to be located at Uhrichsville and the selling office will be in Columbus. The incorporators are J. H. Donahey, Cleveland; J. W. Moore, Uhrichsville, and A. V. Donahey, Columbus.

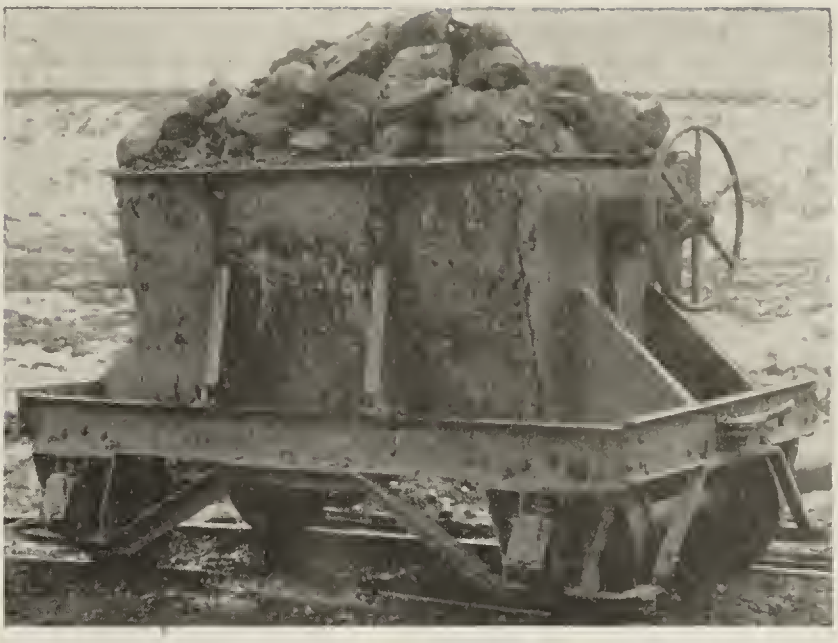
The city council of Lakewood, suburb of Cleveland, has definitely settled upon the carrying out of a campaign for a $1,000,000 street improvement program. An ordinance has been introduced into council to submit to popular vote a bond issue to pay the city's portion of the expense, which will be $500,000 according to City Engineer Fisher. The type of construction to be used has not been decided upon as yet.

J. E. McNally has been elected president of the Columbus Real Estate and Building Show Co., recently incorporated with an authorized capital of $3,000. It is planned to hold a building show in the Buckeye capital early in the coming year. Charles F. Johnson was elected first vice president; William H. Conklin, second vice president; Sam E. Neff, secretary, and F. O. Schoedinger, treasurer. These men with L. O. Vinson and M. A. Vinson, both of Cleveland, constitute the board of directors.

After considerable discussion and much acrimony, the city council of Columbus, Ohio, has decided on its street improvement program for the coming year. The program as originally outlined consisted of about thirty-five miles of street and would cost in excess of $2,500,000 for the city's share. As only $500,000 is available for the city's share the program had to be revised. The cost of the work will amount to $127,000 over the $500,000 available but it is hoped to provide for all of the work during 1918.

W. M. Morrow, of the Hocking Valley Brick Co., Columbus, manufacturers of paving blocks, in speaking of trade conditions said: "The labor situation is probably the most troublesome feature at this time. There is a general restlessness among labor, which is difficult to explain They are not so much dissatisfied with wages and hours; they desire to keep moving and will not work at any one place for any length of time. They hear of the enormous wages paid in San Francisco, Pittsburgh, and other places and become dissatisfied. That is one of the drawbacks to the manufacturing end of the paving business at this time."

Brick will come in for its share of attention in the new plans of the manufacturers of Cleveland, thru the Chamber of Commerce, to reduce the shortage of housing facilities. Thru Miss Charlotte Rumbold, secretary of the housing committee of the chamber, the co-operation of the manufacturers of the city and of Alexander Bernstein, public service commissioner, have been secured, toward the formation of a stock company, in the development of which all interests in the city affected by the lack of housing will lend their assistance. The city today is 10,000 houses short and every



Look This Car Over Carefully

Note the way it is braced, and the manner in which it is put together. Stout and rugged, capable of resisting dipper hammering, big chunks dropped into it, derailments, etc. In addition it is Bottom Dump, it does not hammer itself to pieces when dumping.

The Youngstown Steel Car Company
Youngstown, Ohio

Your Fortune For Coal Or Use Canton Shaking Kiln Grates Which?

One of the very prominent refractory men says: "It is simply beyond my comprehension why otherwise good plants still use old methods. We are saving over 25% of our fuel with Cantons, amounting to thousands of dollars each season.

Get our bulletins.

The Canton Grate Co.
1706 Woodland Ave., Canton, Ohio
Southern Representative:
Mc BURNEY & JONES
Efficiency Engineers
829 Trust Co. of Ga. Bldg
Atlanta, Ga.

"SCANDINAVIA"
(Solid Woven Cotton Belt)

is the kind of belt that gets the preference from those clay-products manufacturers who are most particular about knowing the exact cost of operation in every detail.

"Scandinavia" always shows up so well when the manager looks over the cost figures that there never is any question as to the belt that will always have the preference.

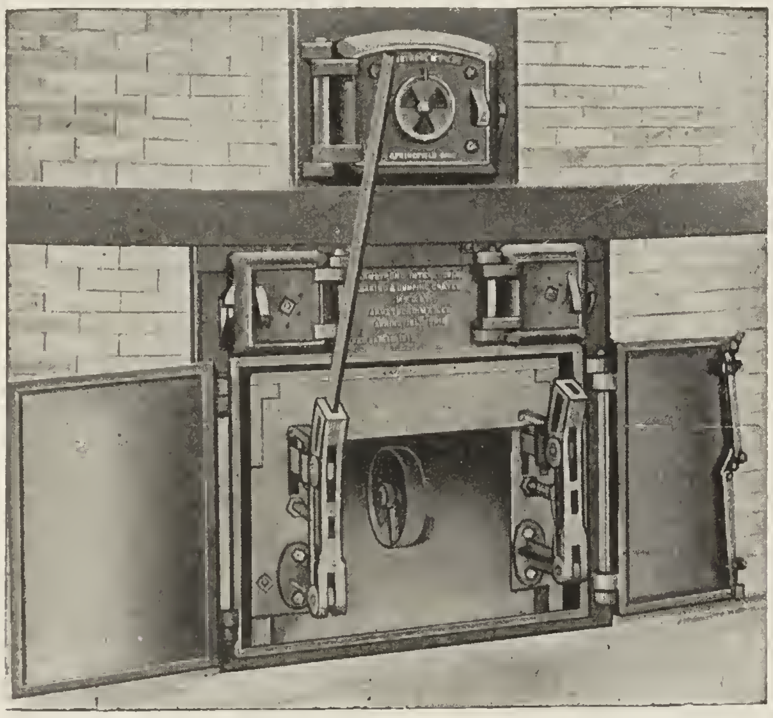
"Scandinavia" is the belt for you to use for power transmission—elevating and conveying.

Try it once and you'll be convinced

Scandinavia Belting Co.
106-108 Reade Street, New York

Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.

Canada: Federal Engineering Co., Limited, Toronto and Montreal.



Just one movement of the dumping device of the

Standard Interlocking Kiln Grate

entirely cleans the fire—clinkers as thick as six inches are easily handled.

This is only one of many points of superiority that make this the ideal kiln grate for every brick plant.

We install it at our expense—you give it a thoro trial—if it doesn't do all we claim we'll remove it without any cost to you.

Write for details and prices.

The Armstrong Manufacturing Co.
SPRINGFIELD, OHIO

effort will be made to catch up with this demand in earliest possible time.

The brick-asphalt war, at Akron, Ohio, which has been quiet for a few weeks, is about to break out again. Bids were opened for $400,000 worth of paving on county highways. The asphalt men, barred from Summit County, a brick stronghold for many years, are making a determined effort this year to break in. They convinced the county commissioners to give them the work on Copley Road, resulting in a hurried mustering of brick forces, a taxpayers' suit filed by Seth Minor, farmer, and T. E. McShaffrey, contractor, who owns property there, a bitter court battle bringing out irregularities in the award, and action by Judge Fritch setting aside the contract. The battle has resulted in a political tussel between the Democratic and Republican commissioners of the county.

Cleveland brick men were well represented at the recent outing of the Builders Exchange of that city, held at Dover Inn, Wednesday, September 19. The feature of the day was the horseshoe tournament which was designed to settle many disputes of long standing among various members. C. B. Jacobs, the principal challenger, was nosed out by a couple of dark horses who brought home the bacon in the shape of two horse-shoe stick pins. The winners were Cary R. Alburn, attorney for the Building Trades Employers' Association, and M. J. Hearley, of the Great Western Oil Co. The brick men were lost somewhere in the shuffle. The attendance was large, about 250 attending. After an afternoon of sport an old fashioned country dinner was served. The party motored out to the Inn, which is nine miles west of Cleveland.

The Board of Administration of the state of Ohio has under consideration the purchase of a tract of land in southern Ohio, which is underlaid with two eight-foot veins of coal, three veins of shale suitable for clay products manufacture, and which contains gas enough to operate a brick plant four or five times the size of the present one. The board hopes first, to mine all the coal that it needs; second, to make several million brick a year for highway improvements, and third, to furnish work for hundreds of able-bodied prisoners now without work at the penitentiary. The shale they say would be ample to make several million paving blocks each year, the gas supply is sufficient to burn the brick, if not, the coal could be produced at about $1.19 per ton. Later on the board plans to build its own coal cars and if the plan works out, even municipalities may be able to purchase coal for just about one-half the present marked price. Above all, it would solve the idle-house problem, a problem which has been a stumbling block at the penitentiary for many years.

Pennsylvania

The Kertes Self Spacing Tile Co. has been incorporated at Pittsburgh, Pa., with a capital of $200,000.

Fire at the plant of the Glenwood Brick Co., near Glenwood Park, on the Waterford Turnpike, at Erie, Pa., entailed a loss estimated at approximately $15,000. Joseph Dudenhoeffer is general manager of the concern.

An order for 300,000 paving brick, "more or less," was instructed to be placed with the Joseph Soisson Fire Brick Co., of Connelsville, Pa., by the city council of that city. The price agreed upon was $23 a thousand, plus the cost of inspection at the Volcano plant. If the brick are to be delivered in a hurry, the city will also be required to furnish labor for loading and hauling. There

are about 500,000 paving brick at the plant ready to be shipped.

It is rumored that F. Blair Isenberg and Wallace Wilson, of Alexandria, Pa., have secured an option on the old American Sewer Pipe Co.'s plant at Long Siding, which is just on the other side of the river at Huntingdon, Pa. These men have obtained the opinion from three experienced refractory brick manufacturers that the kilns at the sewer pipe plant can with very little repairs be placed into a condition to burn magnesite brick satisfactorily. It is stated that the factory building can be fully equipped and made ready to manufacture magnesite brick within ninety days.

Tennessee

The plant of the B. Mifflin Hood Brick Co., at Melville, Tenn., is now in operation and running on promenade and floor tile. This company reports plenty of orders and is manufacturing a very high quality product.

A new company has been formed under the name of The New Citito Brick Co., at Chattanooga, Tenn., and has taken over the plant of the Citito Brick Co., which has been operated for several years by the Citizens Bank and Trust Co., and which was recently sold under deed of trust. The new concern is capitalized at $25,000 and has been incorporated by A. C. Earnest, E. H. Carns, E. B. Shadden, D. S. Zachary and John D. Cantrell.

The Key-James Brick Co., Chattanooga, Tenn., has just received an order to furnish their rough texture "Burlap" face brick for the new ten-story Farragut hotel at Knoxville, Tenn. In addition to this large job the Key-James company is supplying brick for the Y. W. C. A. building going up at Lynchburg, Va.; for church buildings being erected at Lexington, Ky., Atlanta, Ga., and Greenwood, S. C.; for a hotel under construction at Tupelo, Miss., and for residence jobs at points in Kentucky, Virginia, Tennessee, Louisiana, Alabama and North Carolina. In the face of the pessimistic reports which are so predominant at this period, the above smacks of considerable activity.

Texas

The Groesbeck Brick Co., of Groesbeck, Tex., increased its capital stock from $17,000 to $32,000. The increase is all paid in.

Virginia

Brick will be the product manufactured by the Nansemond Brick Corporation, of Norfolk, Va., incorporated with a capital stock of $100,000.

The full bench of the Massachusetts Supreme Court has dismissed a bill brought by the Jamestown (Va.) Portland Cement Co. against Former Rear Admiral Francis T. Bowles of Boston and others in which the plaintiff sought to have the respondents ordered to specifically perform a contract in subscribing for the stock of the Yorktown Cement Corporation, a Massachusetts corporation formed to take over certain marl and clay lands in Virginia owned by the Jamestown company. The court ruled that the bill did not show a binding contract as against the respondents. The subscribers were all Boston parties and the amount involved was $999,500.

Wisconsin

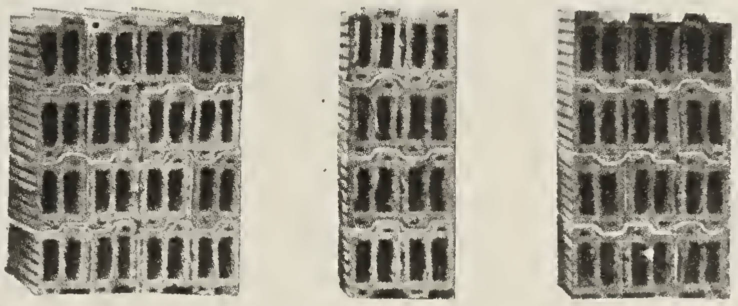
The Red Press Brick Co., of Menomonie, Wis., closed down for the season the other day fully a month earlier than the usual closing time. This was done to allow time to

Tycos
FERY RADIATION
PYROMETERS
Eliminate Guesswork from the Manufacture of All Products requiring extremely high Temperatures * * * *

We Manufacture - Thermometers and Instruments covering every Temperature requirement in Metallurgy and Chemistry

A Catalog Cheerfully Sent Upon Application

The Taylor-Cambridge Division
Taylor Instrument Companies
Rochester, N.Y.


"LOXALL"
A BETTER HOLLOW BLOCK

You can get it—the exclusive rights to manufacture it in your territory—if you act now.

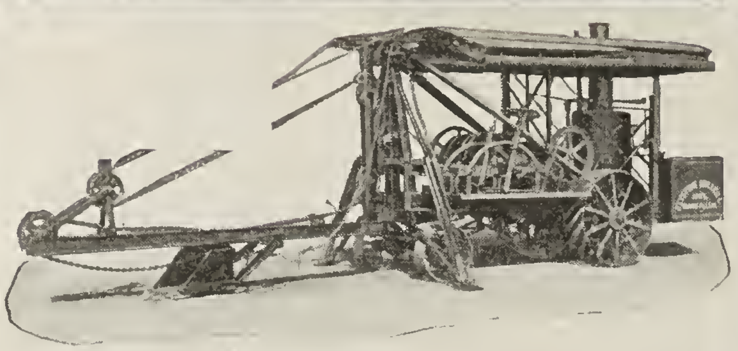
It is designed so that everybody concerned likes it—the Buyer, the Mason, the Manufacturer.

It is easy to make and low in cost. It is easily and quickly laid in the wall. It has a good appearance. It is a real heat, sound, moisture and air insulator.

"LOXALL" is a better hollow block. The interlocking lugs dovetail perfectly, making a joint that the mason finds easy to spread. Act quickly and get your territory assigned.

J. E. EXNER
602 Lincoln St., Coffeyville, Kansas
Patented in the United States and Canada.

KEYSTONE



PORTABILITY

THE KEYSTONE EXCAVATOR (MODEL 3) is a light traction shovel. It weighs ten tons, wheel-base, about ten feet. Rear wheels 55-inch in diameter with 16-inch tires. Front wheels 30 inches in diameter with 10-inch tires. It has two traction speeds and will go anywhere on its own power where you could take a loaded dump wagon.

SKIMMER BUCKET ½-YARD CAPACITY. Machine will load 250 to 500 cubic yards in ten hours, operated by two men. Replaces 25 to 50 hand shovellers, has powerful crowding thrust and will dig toughest fire clay. We will furnish names of brick manufacturers, cement plants, etc., using Keystone Shovels in pits under all conditions.

You save in first cost, up-keep, repair expense and moving cost. Get from one set-up to another in quick time. No planking necessary if ground is dry and solid.

Your Engineers agree that it is good business to install two light machines in place of one heavy unit. The explanation is PORTABILITY!

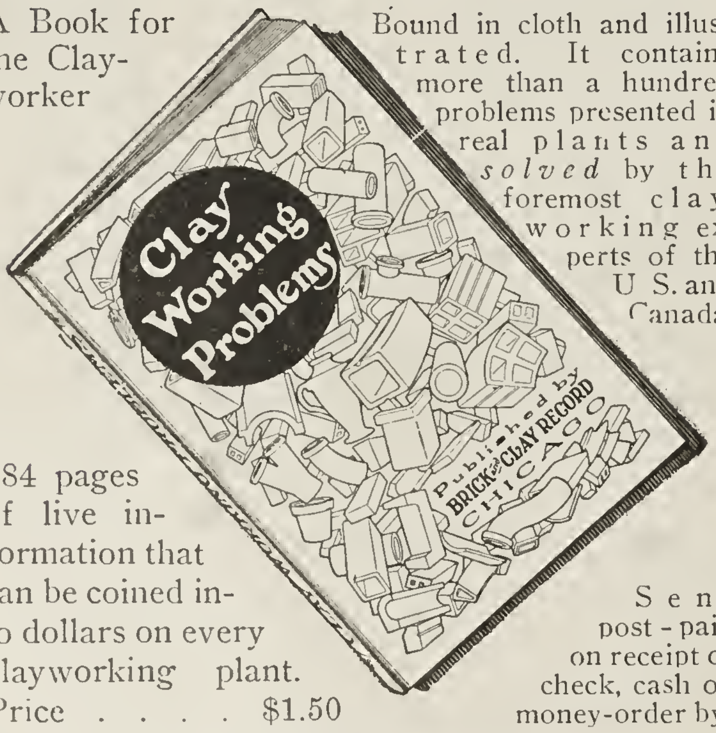
All operations illustrated in catalog, which will be sent on request.

KEYSTONE DRILLER CO., Beaver Falls, Pa
170 Broadway, New York City Carthage, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

101 Questions Answered

A Book for the Clay-worker


Clay Working Problems
Published by Brick & Clay Record Chicago

Bound in cloth and illustrated. It contains more than a hundred problems presented in real plants and *solved* by the foremost clay-working experts of the U S. and Canada.

184 pages of live information that can be coined into dollars on every clayworking plant.
Price $1.50

Sent post-paid on receipt of check, cash or money-order by

Brick and Clay Record
445 Plymouth Court CHICAGO

make extensive improvements and enlarge and modernize the plant before cold weather sets in. J. D. Pratt, manager of the yards, has stated that the work will begin on the improvements as soon as the weather is favorable. While the closing was much earlier than usual it was quite fortunate for the company, as the heavy frost of the day after closing would probably have occasioned the loss of about 700,000 brick.

* * *

POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

QUESTION OF WOMEN WORKERS UP

The cry in the potteries is for more workmen, and some plan, it is generally conceded, must be worked out to make up the deficiency. Otherwise there is going to be a shortage of ware that may border on a famine, and no one wants that whatever else they may desire in these troublous times. The problem has been solved in a measure in England and France, and it is probable that Germany has done the same thing, by adding women to the working force wherever possible.

This, apparently, must be done in this country, and that before long, if the plants are to work at anything like capacity. There is ample manufacturing facility, but in many instances the labor cannot be secured to keep it to its maximum of production or anything like it.

The United States Potters' Association has taken up this question very carefully in the demands it will make upon the Brotherhood at the coming wage conference. "There shall be no restriction against or opposition to the employment of women in any department, nor in any trade, limited only to the class of trade women are physically competent to perform," is the manner in which the demand has been put. Also "the doors shall be opened to foreign white labor in all departments and trades, and that employers shall be the judge of competency."

Another one is of interest since it says: "All rules in reference to ratio of apprentices be suspended, and employers be permitted to put on an apprentice in any department or trade if, after application to the Brotherhood officials, a competent, steady journeyman is not furnished to fill a vacancy in ten days."

If the wage committee insists on these changes and succeeds in getting them thru, many of the trials and troubles which have marked the path of the pottery industry in recent years will be eliminated for the period of the war at least. Of course the workers' committee will oppose any such innovation, but it might be well for them to understand that since everybody else is doing his bit they must do theirs if they want to stand among patriotic people.

DOMESTIC POTTERS DEMAND ASSURANCE

Domestic manufacturing potters have reached a point in the conduct of their business when they realize that they, too, are entitled to a measure of justice at the hands of the union organization with which they have dealt for so many years. They feel that if they are willing to keep their agreements the men also must keep theirs, and that if they are willing to pay the highest wages paid to potters anywhere in the world, the potters who receive this pay must give them a full share of work.

There is nothing of oppression in such a proposition. It is simply the logical outcome of the condition created by what the men have been pleased to call collective bargaining. On the one hand the men organize for the purpose of bettering working conditions and increasing their pay. On the other hand, the manufacturers organize to insure an agreement that will give them something tangible in return for any increase in wages they may see fit to grant. They have every right to expect that the organization of the men will impose the necessary obligation on every worker and see that it is carried out.

POTTERS RUSH GOVERNMENT ORDERS

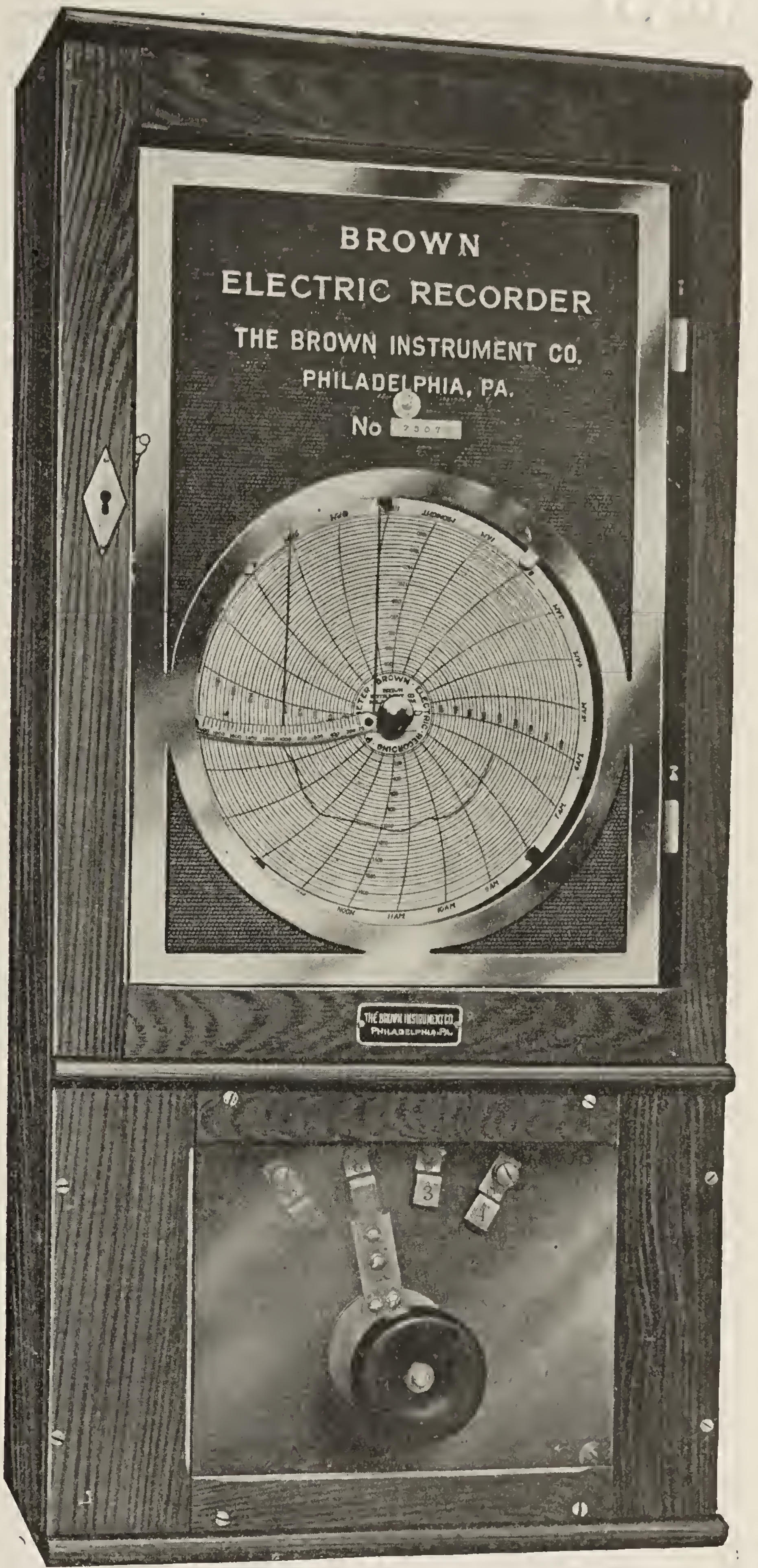
Pottery manufacturers with federal orders have been making record time filling contracts for the army and navy, and it is predicted that the government will have no complaint to make when the initial shipments have been completed. The permanent nature of the cantonments made it necessary for the government to have large quantities of table supplies, and these have been provided as quickly as the potteries were able to get them out. Some of the orders, it was stated, were placed direct by the quartermaster's department, while others passed thru the hands of jobbers. That a great deal more of this business will be offered within the next month or two is the opinion of some important trade authorities.

MISCELLANEOUS NOTES ABOUT POTTERIES

The pottery industry has been hard hit in many quarters by the war, and thru the voluntary enlistments and the draft, the production of the industry today is admitted to be between fifty and sixty per cent of normal. The main trouble in the western pottery district has been that the pottery workers will not work when there is work to be had, no matter what the wages may be Many of the workers report for duty when it pleases them, and as one department in this industry depends upon another, it is declared that the loafer keeps a doze others out of employment as long as he is off duty. So far as the labor situation in the western district is concerned, it is a most serious one, and there are no immediate signs of improvement

Probably holiday buyers will find supplies of appropriate pottery short. Practically every pottery in Trenton, N. J., is engaged upon government work, and thus far they have had no opportunity to work on their regular lines, or the special goods required for the coming holiday trade. The cantonment orders must be filled shortly, altho the work may be done in time to make up something of the deficiency, it looks decidedly unpleasant for holiday buyers at present. The same is true of the regular lines which of necessity have been neglected during the past three months, and it will be difficult to catch up with the work after the government orders are out.

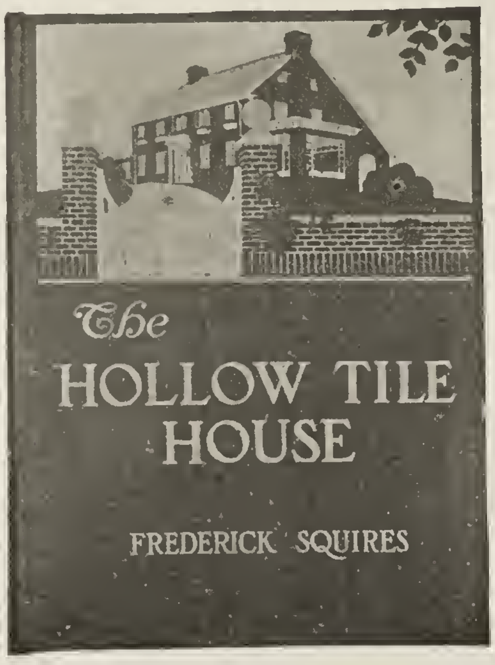
The Thos. Maddock's Sons' Pottery Co., Trenton, N. J., recently gave a banquet in honor of their employes drafted into the National Army. John A. Campbell, president of the company, made a patriotic address. Other speakers were Elzey Aitkin, general manager, R. W. Skirm, Arthur Cooper, Charles Bates, Jr., and



THE CHOICE OF 80%
OF THE BRICK MEN
USING PYROMETERS
TODAY

Browns!

If you make, sell or use Burned Clay Fireproofing



You Need This Book

THE HOLLOW TILE HOUSE

by Frederick Squires

is brim full of valuable information and good reading matter on this new field of hollow tile in residential construction, its history, how the tile is laid up, cost data and a host of other interesting subjects, all of which is skilfully woven by the author into a very fascinating story. A large number of illustrations give the reader an idea of the architectural beauties and possibilities of the hollow tile house. It will be time well invested to read this book.

ORDER A COPY NOW.

PRICE $2.50

Book Department

Brick and Clay Record

CHICAGO

others. General Tallon responded on behalf of the drafted men. A musical program completed the evening's entertainment.

The Thomas Maddock's Sons Co., Trenton, N. J., is planning to erect a one-story brick kiln shed. The structure is estimated to cost approximately $4,500. Fire recently destroyed a portion of the Lamberton works of the Maddock company, Trenton, causing a loss estimated to be about $6,000. It is reported that the plant will be immediately rebuilt. Charles A. May is president.

The belief is general in the pottery trade that new prices will be sure to develop in the early fall, because of the increasing cost of materials and the higher price of labor. There is, however, no nervousness or uncertainty among buyers, who feel that all they can do is pay the price, and pass the advance on to the consumer.

The pottery plant of Gladding, McBean & Co., at Lincoln, Cal., was visited last week by the delegates to the semi-annual convention of the Northern California Credit Association, as one of the leading industries in Placer County.

* * *

MAKING *the* BUCKET ELEVATOR TROUBLE-PROOF

(*Continued from Page* 587.)

necessary. This work should start an hour earlier than the time at which the plant begins operations and each elevator should be examined beforehand for bad buckets, loose belts, clean boot, etc., and the clay shoveled out of the boot each morning. With such care the elevator is given a fair start each day and the clay is prevented from caking solidly in the bottom. It is very discouraging to have an elevator clog up and then discover that, thru neglect, the clay had been allowed to cake in the boot until it was almost like a rock.

There are always things to be done about an elevator and if one man is made responsible directly for that job, much better results will be obtained than if the foreman depends upon seeing what is needed himself and sending a man to do it. "Eternal vigilance" is a good watch word for any phase of the clay industry and applies to nothing on the plant more aptly than to the elevators.

* * *

The brick business at Kansas City, Mo., during the past few weeks has been exceptionally good for this season of the year. Building there, which of course, is mainly of brick construction, is far ahead of the same period a year ago. Many big plants are under construction, absorbing large quantities of brick. However, there has been some difficulty experienced because of the delay in shipments. Brick manufacturers report that their plants are now running to capacity and enough orders are on hand and available in the field to keep the plants going to a greater capacity this winter season than they have heretofore.

HUGE FACE BRICK PROMOTION FUND PLANNED *for* THREE-YEAR CAMPAIGN

(Continued from Page 574.)

their wonderful material thru associated effort. No figures are available for the lumber industry, but, with the extraordinary demand for that material during this year, it seems safe to believe lumber manufacturers are enjoying one of the best years in their history.

A FEW FACTS CONCERNING CEMENT PUBLICITY

The Portland Cement Association's budget for 1917, it is generally understood, calls for expenditures, largely for promotional purposes, of a figure approximating $750,000. How much the lumber man is spending for the promotion of his material, thru co-operative advertising, can be only conjectured, but readers of magazines and newspapers cannot fail to have observed the costly displays put forth by the National Lumber Manufacturers' Association, Arkansas Soft Pine Bureau, California Red Wood Association, Southern Pine Association, Northern Hemlock and Hardwood Association, Southern Cypress Manufacturers' Association, White Pine Bureau, North Carolina Pine Association, West Coast Lumbermen's Association, the Aladdin Company, and many others. For example, a recent issue of the "Saturday Evening Post" carries a half page for the West Coast Lumbermen's Association, advocating red cedar shingles, "for siding as well as for roofs," accompanied by an attractive illustration inset. (The list price of this one display is $2,500, but it must be remembered the law of probabilities will figure that something like 3,000,000 people will see and read it.)

How many prospective home owners, carpenter-contractors, architects and other people, on whom we depend to use face brick, know that an ordinary residence, with thirteen-inch brick walls, can be usually built at a cost not to exceed ten per cent. in excess of the same house built entirely of wood; that face brick veneer on studding costs only from three to five per cent. more than the same house with a frame exterior? Face brick people are familiar with these facts; they also understand the genuineness of the many arguments for brick, which include warmer in winter and cooler in summer, material saving in fire insurance, no painting, practically no up-keep, small depreciation, possibilities of appreciation in value of property, etc., etc. These facts are so clear to brick manufacturers that many of them cannot understand why *everyone* does not see it in the same light.

The following figures are a silent testimonial that our arguments are probably unknown to at least ninety per cent. of the people. The "American Architect" estimated that of all wooden buildings constructed, sixty-eight per cent. are residences; of all concrete and stucco buildings, 39.6 per cent. are residences; of all brick buildings, 10 per cent. are residences. From another authority, we are informed that of all residence construction, eighty-nine per cent. is being built of wood, with brick and its fire resistant competitors fighting among themselves for the remaining eleven per cent.

SMALL INCREASE MEANS CAPACITY OPERATION

By educating sufficient people to use face brick in only five per cent. of the instances in which they are now using

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.

400 Chestnut Street
Philadelphia, Pa.

The Sand-Lime Brick Buildings of
The Crucible Steel Co.
Syracuse, N. Y.
J. M. French, Architect.
Brick made by Paragon Plaster Co. of Syracuse, N. Y.

Send US a Sample

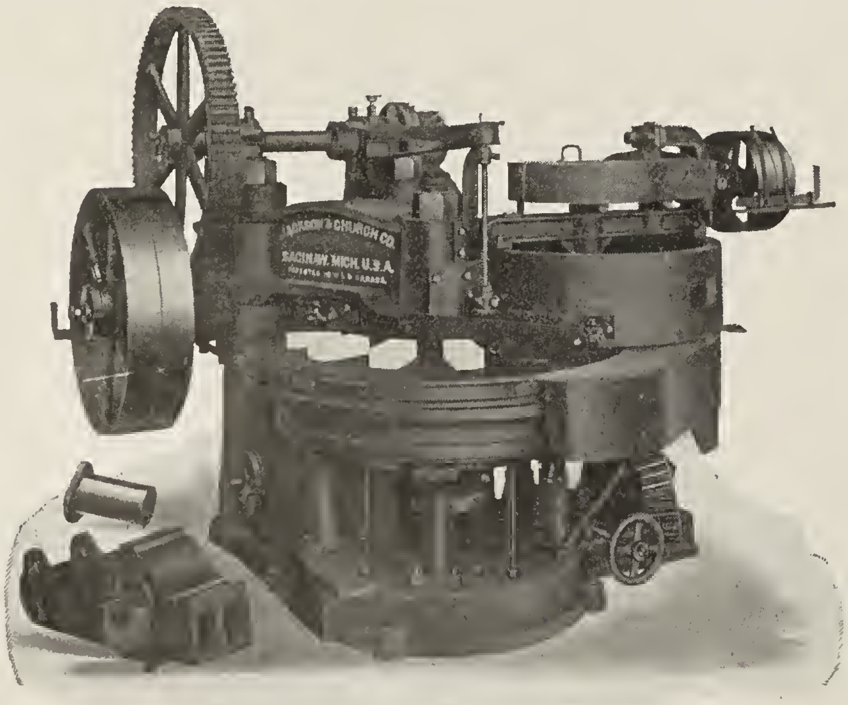
Box up and send to us one pint of the best sand that is available in commercial quantities in your district, and we will tell you if it is suitable. Or box up one cubic foot of sand, and we will make a complete test, sending you the brick if the test is successful.

The machine equipment of a Sand-Lime plant is not complex—the process is simple, and in raw materials the constituent parts are 95% sand and 5% hydrated lime.

The Saginaw Process of manufacture may solve your difficulties, or open up a new manufacturing plant for you with all of the possibilities of a coming business.

Let's talk it over.

Jackson & Church Co.
Saginaw Michigan



The "Saginaw" Rotary Table Brick Press.

wood, the increase in demand for that material would necessitate maximum production by every face brick manufacturer in the United States.

What was the motive of the first man who advertised? Was it not to gain the edge on his competitor? Looking back over all the effort which has been made in the past to promote the use of such a fundamentally excellent material as brick, the total (largely contributed individually) is insignificant. On the other hand, our chief competitors are freely spending their money to show the building public why the use of their particular materials is either more economical or artistic.

If brick is making even a slow advance in answer to public demand, it is on account of its own fundamental merits, and not because the manufacturers generally are using up-to-date merchandising methods. The opportunities for an expansion in demand for such wholesome material as face brick are practically limitless. The field is wide, and has for years, been waiting to be intelligently exploited.

In the event this huge enterprise is successful, the Board of Directors of the American Face Brick Association will be responsible for the efficient expenditure of the funds resulting. The present Board of Directors (fifteen) is composed of men with nation-wide reputations among face brick manufacturers, and it can be safely assumed that changes which may occur in the personnel of this body will be characterized by the use of the services of the same type of high grade and efficient men, loyal to the core to this industry. There are scores of plans for one or another kind of promotion for face brick, any one of which may have more or less merit in possibilities. The collective judgment of fifteen such representative men, as comprise the Board of Directors of the American Face Brick Association, cannot seriously be questioned, and this is practically the equivalent to a guarantee that if sufficient signatures are received, the funds resulting will be spent in the most efficient way to get maximum returns.

PLAN IS ALSO A PREPAREDNESS MEASURE

In considering this promotion plan, it must be carefully borne in mind that, if times were now normal and if sufficient signatures had already been obtained, it would require several months of preparation before we could possibly be ready to undertake such a huge program; that even if we were at this moment ready to go ahead, the movement could not be gotten under full headway for at least a year, possibly two years; that, while our business is admittedly depressed today, we cannot possibly foretell at this time what will be the situation in six or nine months; and, if the co-operation of the number of the necessary manufacturers can now be obtained, the industry will be in position to take advantage of any favorable turn in circumstances which may develop.

To sum up: The plan for concerted promotion of the business appears to be equitable, logical and timely; every face brick manufacturer is to be asked to sign the same contract, whether his present shipments amount to one hundred per cent., ten per cent. or nothing; if he ships few face brick during the term of the contract, his expense will be correspondingly light. The opportunity to place the face brick industry on firm, instead of shaky, foundations, is here, but, in order to accomplish the ideal, every manufacturer must be counted upon to put his shoulder to the wheel and push according to his strength.

Any additional information, in regard to this subject, can be promptly obtained by addressing inquiry to the secretary of the American Face Brick Association, Fulton Building, Pittsburgh, Pa.

BUILDING READJUSTMENTS SETTING IN

AS A MEASURE OF PROTECTION against inadequate housing of labor employed in munition manufacturing centers the National Society of Defense is making a national survey to ascertain the need for immediate construction of thousands of non-steel buildings, says the Dow Service Daily Building Reports of New York.

Henry Atterbury Smith, the architect, has been serving as an investigator for eastern centers, including Cleveland, Akron, Pittsburg, Chester, and the Naugatuck Valley, including Bridgeport, and has found that some means must be found for providing cheap money for building proper dwellings for workers if government war requirements are to be supplied at the pace the present stage of the war demands. The investigation so far has developed the fact that a wholesale shifting of industrial population is forcing a condition that will prove to be an important one in meeting at an early date the growing demand for housing and the present timidity of building money.

This fact, coupled with the belief of Walter T. Smith, vice-president of the George A. Fuller Co., who has his finger on more than $25,000,000 worth of proposed new building construction the country over, that sometime around the first of the year the building situation as a problem would substantially clear itself, an increasing number of persons interested in building construction are led to believe that a demand for construction is gradually developing, that despite the present price levels construction work would again get under way.

In the building material price market a general stability of levels has prevailed during the last seven weeks. Increases that have occurred, such as, for instance, the change in the price of Indiana limestone from eighty-three cents to ninety-three cents a cubic foot to the present level quoted this week of eighty-nine cents to $1.04 is due to the increase in freight rates that have become effective on some of the western railroads.

The tendency seems to be to hold prices down as near to bottom as safe business policy will permit, but until the money market becomes easier, builders will probably find a continuation of the tendency not to protect quotations for the life of the job because even with wage contracts and stipulations, complaints are made that levels are not secured for any length of time.

Lumber prices are governed in soft woods by the abnormal demand for material entering into cantonment construction. The buying movement is believed to be reaching its height in this respect, however, and the situation is therefore becoming more favorable to the builder. Certain departments of the lumber market appear at the moment to be tending toward higher prices because of special requirements. For illustration, the government is calling for 7,500,000 feet of oak for use in the manufacture of airplane blades. These blades were formerly made of mahogany and walnut, a line of lumber that did not seriously interfere with ordinary building requirements. Oak directly affects the flooring and trim trades.

In the common brick department there is a tendency toward higher prices, the top level of $8.25 a thousand, wholesale, for the best grades being somewhat easier to get. As the week closed, there were only three barges in barger, or a little over a million brick. In dealers' hands

THEW Shovels in the Clay Pit

Increase the Production of Their Plant

The illustration above shows a Thew Shovel, Type 4 at work in a fifty foot bank supplying shale for three plants. Increasing the production of The Mason City Brick & Tile Co., Mason City, Ia., its satisfied owner.

The ability to increase the supply of raw material so that production may meet the demand is where a Thew wins a Chorus of Praise from users in the Clay industry.

That's why more than 300 brick manufacturers use Thew Shovels. There is a Thew owner near you, ask for his name, costs and relative data of Thews in the industry.

"Thews are Everywhere"

The Thew
Automatic Shovel Company
Lorain, Ohio

New York Office—30 Church Street

Your Coal Troubles Are Not Over

The tentative prices made by the government do not insure against shortage next winter.

You will have difficulty in securing the coal necessary to the operation of your plant.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

there were seventy barges, which is a quantity much below normal for this time of the year. Threatened trouble with the barge captains has been settled by giving them a twenty per cent. increase in wages, but the manufacturers are not to recognize their union. The quick settlement of a difficulty that promised to prove serious has stopped dealers from riding from their winter stocks. In the Raritan district there is little brick being shipped by barge and prices quoted are merely nominal.

The electrical contractors of the country are planning for a great convention here next month, at which time the building situation as applied to electrical work will be studied as a national unit.

In practically every department of the building construction market there are increasing evidences that the period of readjustment is setting in. Conferences, wage revisions, delivery agreements, and similar negotiations apparently indicate general plans for getting ready for a return to normal conditions, just as soon as the coming Liberty loan campaign is over and the banks and lending companies ascertain definitely how much money depositors are going to patriotically withdraw in order to subscribe. The great demand for construction at present is expected to force a quick recovery and an early passing of the building situation as a problem.

* * *

The Fruits of Railroad Co-operation

Some concrete examples of what has been accomplished in four months, thru the voluntary act of the 693 railroads of this country merging their competitive activities for the period of the war and uniting in one continental system are contained in a summary of the more important activities of the Railroads' War Board during the first four months of its existence.

By welding into one loyal army of 1,750,000 persons employed by the railroads, from engine wipers to presidents, the co-ordination of the nation's carriers has made possible the most intensive use of every locomotive and freight car, every mile of track and every piece of railroad equipment in the country. Besides this, the coalition of the nation's railroads has facilitated the securing of invaluable co-operation from shippers and the general public.

According to the statement contained in the bulletin referred to, showing what has been accomplished thru this co-operation of the railroads, the shippers, and the public since April 21, the excess of unfilled car requisitions over idle cars (what is commonly called car shortage) has been reduced 70 per cent. On April 31 the so called car shortage amounted to 148,627, on June 30 the figures had been cut to 77,144. On August 1 the excess of unfilled car requisitions over idle cars amounted to nearly 33,776.

In the month of May, freight transportation service rendered by about 75 per cent. of Class I roads (earnings of $1,000,000 or more), was 16.1 per cent. in excess of the service rendered in 1916. In that year, which was one of unusual activity, the freight service rendered by the carriers was 24 percent. greater than in 1916. So the carriers have added to their freight service, in the short period of two years, an amount equal to the freight traffic of Great Britain, France, Russia, Germany, and Austria combined.

Approximately 20,000,000 miles of train service a year have been saved by the elimination of all passenger trains not essential to the most pressing needs of the country. This reduction of passenger service has released hundreds

of locomotives and train crews and cleared thousands of miles of track that are absolutely needed in the freight service for the transportation of necessities.

MOBILIZING FREIGHT CARS

Freight congestion at many important shipping points has been averted by promptly moving empty cars from one railroad to another, irrespective of ownership. By ordering the adoption of this policy, which is brand new to American railroad usage, the Railroads' War Board has moved 113,420 empty freight cars into districts where they have been most needed.

By regulating the movement of grain for export, the number of cars ordinarily required for this service has been reduced, despite an abnormal export increase this year, 75,682,028 bushels of wheat, corn, barley and oats being shipped to the Allies from May 1 to July 14.

SHIPPERS CO-OPERATION PARAMOUNT

Altho the figures on the intensive loading of freight cars are not complete as yet, a sufficient number of reports have been received from the twenty-seven local committees of the War Board to show that commercial bodies and individual shippers in all parts of the country are giving hearty co-operation to the railroads' campaign "to make one car do the work of two."

Checks made recently in Florida and Georgia on loaded potato cars show, for instance, that cars are carrying 200 barrels this year, against 125 barrels last year.

In Pittsburgh, tin plate cars that carried 92 per cent. of their marked capacity on June 27 last, are now being loaded to carry 98.6 per cent.

In Minnesota, the average carload of flour in 1916 amounted to 46,250 pounds; this year the average carload is 61,923 pounds.

In New Orleans, sugar cars that were being loaded to carry only 40,000 pounds three months ago, now carry an average load of 80,000 pounds. In other parts of the country, sugar refineries have voluntarily increased their minimum capacity 25 per cent., or from 40,000 pounds to 50,000 pounds.

* * *

Workmen's Homes for 50,000 Held in Balance at Baltimore

A most unusual situation is now confronting the brick industry in Baltimore, a condition unparalleled in these parts. Ever since Charles M. Schwab, the Bethlehem Steel Co. magnate, announced his intention of developing his recent purchase of the shipbuilding and steel plants at Sparrows Point, just outside of Baltimore, the manufacturers have been ready to do many big things which will be required of them, but the recent international developments have put matters, colloquially speaking, in the air. They are now coming down like the crack of doom when they do descend, and the brick men here are waiting and watching, ready to jump.

Briefly, the situation is this: The enormous development which Mr. Schwab contemplated at Sparrows Point would have meant in a very short time the ingress of more than fifty thousand new workmen to the mills. This would have meant the erection of a small city to house them. Edward R. Bouton, who developed Roland Park, one of the most picturesque suburbs in the world, and which is just north of Baltimore, decided to develop the territory adjacent to Sparrows Point, and it was planned to erect brick dwellings for the accommodation of 50,000 people.

Matters had progressed to such an extent that the steam

"On-the-Job" GANDY sings—
"You keep the home fires burning,
I'll keep the wheels a-turning,
And Victory is assured!"

"YOU captains of industry keep the home fires burning in plant, mill and mine, and leave it to me—the world's champion power and material conveyor—the original stitched cotton duck belt—to keep the wheels a-turning with a 100% production hum.

"I'm built for the job. My sinews are tough and strong. My wonderful endurance and ability to get ***all the pull from the pulley*** year in and year out in sun and rain, live steam, acid fumes and dust, make me your one best co-operator.

"Don't forget that preparedness is vital to success. Traffic conditions are not improving, so get in touch with me now for quick delivery of your belting requirements.

"Look for my painted green edge and well known GANDY trade mark to be sure you're getting the one and only GANDY stitched Cotton Duck belt.

"Order me from your mill supply house or—

THE GANDY BELTING COMPANY
732 W. Pratt St. Baltimore, Maryland
New York Branch: 36 Warren Street

SAY I SAW IT IN BRICK AND CLAY RECORD

It Takes Good Steel To Build Good Cars

—and some time ago we determined that we would give the clay products industry prompt shipment on LAKEWOOD cars at all times.

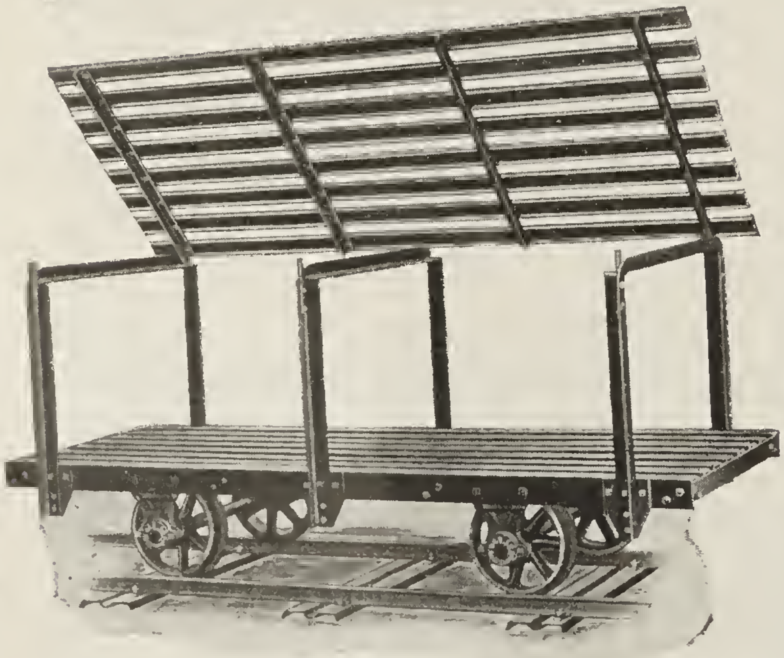
So—we laid in a big stock of high grade steel (the only kind we use) and we have also enlarged our manufacturing facilities so we can give you

Prompt Shipments on Dryer Cars and V Dump Cars

This is only another instance of the practical benefit you get from LAKEWOOD SERVICE. Use our products once—entrust your orders to us—and you'll continue to

Leave It to Lakewood

The Lakewood Engineering Co.
Cleveland, Ohio



shovels were on the ground and excavation had begun for the erection of the houses, when the entire situation changed over night. The government had decided that ships, great numbers of them, must be built; but it had not decided, and at this writing *has* not decided when and where and by whom the ships will be built. The Shipping Board, as is well known, has gone through some strenuous weeks and months, but no decision has been reached as yet. The ships that were to have been built by private enterprise are now to come from channels under government patronage. The government has all the voice in the matter now; and the government, as represented by the shipping board, doesn't know whether it will use Mr. Schwab's plant at Sparrow's Point, or locate a plant at some other place, or what it will do.

In consequence of this, Mr. Schwab had to hold up on his end of the deal. Mr. Bouton also decided he had better wait about putting those houses up for the 50,000, and so the situation now is that everybody has to wait; and be ready to jump the way the government decides to hop. It has got to come soon, for the need of ships is imperative; it will come suddenly and the brick men are ready for it when it happens.

Meanwhile, building conditions are not normal. Builders are extending their developments of dwellings all to the north and east of Baltimore but the scarcity of labor is proving a serious handicap. This is not expected to endure, however. The government is erecting a cantonment for forty thousand troops at Camp Meade, which is not far from Annapolis, Md., and in order to rush it to completion, they are offering alluring inducements to carpenters, and in fact all labor, skilled and unskilled, to go there and work. This, of course, has held up the building of a great number of projects, but the brick men have good reason to believe that within three weeks or a month at the outside, the Camp Meade rush will be over, and the workmen will be back in Baltimore ready to build houses again.

Deliveries have been fairly good during the last two weeks. The regular fall boom is at hand; there is plenty of work, for in addition to building three big new hotels, all of them of brick, Baltimore is also preparing to start erecting hundreds of rows of new houses, and the brick men see big business for the fall. They expect to have more work on their hands very shortly than they can handle.

In the fire brick trade, things are equally prosperous, so far as orders are concerned. The great number of new manufacturing enterprises, the boom of the factories in the last few months, has caused a very perceptible increase in the demand for refractory products. The Union Mining Co., which has a plant at Mt. Savage, Md., reports the greatest demand in years for its products, but the scarcity of labor affects the output considerably. A very important percentage of its force has enlisted. The officials are hoping that within a month this condition will be relieved because of several contributing conditions.

⁂

Industrial Wasters of the World

According to the trade industrial commission of New York, during a period from October 1, 1915, to June 30, 1916, there were 328 strikes reported, involving directly 222,325 persons, who lost 8,114,438 days; indirectly, 31,621 persons were thrown out of employment for 1,466,725 days, making a total of 9,581,163 days' lost time. This is equivalent to 306 centuries of time lost thru strikes in one state in nine months. We are becoming the industrial wasters of the world.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

---

"Casings for Link-Belt Silent Chain Drives"

This is the title of a new book, No. 342, just issued by Link-Belt Company, Chicago, and in which they bring out very clearly why they recommend the use of casings. To quote briefly: "Our greatest successes have come thru the employment of our oil-tight, dust-proof casings, in places where flying grit and abrasive dust make it foolhardy to attempt the use of silent chain drives running exposed."

Then there is the "Safety-first" feature. But you will want to read for yourself what the Link-Belt Company say about the value of casings. The booklet is free for the asking.

* * *

Application of Motor Power is Most Important

"Haulage ability is not a question of how much power is developed by the engine, but of power distribution and application," asserted H. M. Lee, president of the Duplex Truck Company of Lansing, Michigan.

"We recently demonstrated," continued Mr. Lee, "that the front wheel drive is more effective than the rear wheel drive, and at the same time substantiated our claims that the four-wheel drive principle is superior to either the rear or front wheel drive.

"During the excavating for the foundation of a local factory, the excavated material was hauled away with a Duplex 4-Wheel Drive Truck. The runway from the pit to street level was rather more than a 33 per cent. incline, which—together with the fact that the truck was hauling 8,000 pound loads—was a severe test of the pulling ability of the 3½-ton truck.

"To settle a matter then in question, the contractor de-

New Link-Belt Book No. 342 Telling Why Casings Should Be Used

"Hm! This belt's nice and pliable, George. How do you keep it that way?"
"With Cling-Suface, Uncle. I let it take up all it would hold. It's 15 years old."
CLING-SURFACE

"DID you wish to see me?"

The Superintendent came up and shook hands. "You're the fifth belt dressing man who's been in here this week. I'll tell you what I told the others; my belts are large enough, and are not slipping. I don't need CLING-SURFACE."

"That's fine!" said our Salesman, "And how are they lasting?"

"Lasting? Great! I use an oil—put it on whenever they get dry—been using it all winter."

"Are you running any of them slack?"

"Well, not exactly. But they're not too tight, and they're big enough to carry the load—Taylor system, you know?"

"Yes. Say, did you ever look up Taylor's figures? You know he made a nine-year belt test at the Midvale Steel Company, from 1884 to 1893—three years before CLING-SURFACE was discovered. He found for one group of belts that the average cost per belt for cleaning, greasing, tightening and repairing was $12.23, of which greasing and cleaning alone was $4.24. That leaves about $8.00 per belt, or 65%, for tightening and repairing. How would it strike you, Mr. Hood, to just quit tightening belts altogether, cut out repairs, and save this 65%?"

"Do you mean—never take up a belt?"

"Not until the sides touch, yes."

"Can't be done!" the Superintendent exclaimed. "What's to prevent the slipping if it gets too loose?"

"The belt itself! Make your *belts* slip-PROOF. You can do it here with any belt you've got. Take this picture, for instance. Here's a 20" double-leather belt, doing 225 HP, running over a mile a minute and operating a dynamo in an electric light plant. Almost every condition unfavorable, yet it hasn't been taken up in 11 years.

"The semi-liquid CLING-SURFACE has body, heaviness. Once in a belt it stays there, surrounds and preserves the fibres, and prevents drying out or cracking. It makes the belt mellow, pliable, elastic and gives it weight instead of taking it away, whereas a thin oil makes your belt pliable but spongy.

"And it's a *pure* compound. We've sold it all over the world since 1896—and make it now so you can use it cold. It's guaranteed absolutely."

"Hm!" Mr. Hood was thinking hard—thinking about the scarcity of labor and the big Government contract the firm was going to get. "You say I won't have to take up my belts—that they'll run without slipping under full load, anywhere, and last longer?"

"Absolutely, Mr. Hood," said our Salesman. "The CLING-SURFACE Company won't charge you a cent if you don't get these results. Shall we say 50 pounds on this understanding?................Thank you!"

Remember, use CLING-SURFACE and you won need belt dressing.

Cling-Surface the life preserver for belts TRADE MARK

CLING-SURFACE COMPANY
1029 Niagara Street
Buffalo New York U S A

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part I, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.20
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.50
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scumming and Efflorescence	.50
Seger's Collected Works	3.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, Book Department,

Brick and Clay Record
445 Plymouth Court, Chicago, Ill.

cided to satisfy himself which represented the greatest hauling factor—front wheel pull or rear wheel push. He disengaged the front wheel drive shaft, in consequence of which the Duplex had no more and no less hauling power than ordinary rear drive trucks of the same rated capacities. But the load and the incline proved too much for the rear wheel push; the truck refused to budge.

"Then the front wheel drive shaft was engaged and the rear wheel shaft disengaged. With only the front wheels at work the truck negotiated the incline without difficulty.

"On a second trip, under identical conditions, the truck was stopped half way up the incline, then started again, and as before, it made the balance of the grade without a hitch.

"This test thoroughly demonstrated the effectiveness of the four-wheel drive principle and perhaps makes it more readily understood why the government favored four-wheel drive trucks in its recent order for motor vehicles to be used in army service."

⁂

Extension of Plant

The Homestead Valve Manufacturing Company, of Homestead, Pa., announces that it has almost completed the rebuilding of its manufacturing plant and office buildings, whereby it added about 75 per cent. space to take care of the increase in its business.

In addition to adding more floor space in its factory and offices, the Homestead Valve Manufacturing Company has also added considerable new machinery and equipment, especially in the foundry where the production has been almost doubled in a short time.

Homestead Quarter-Turn Valves are used extensively in the munitions and powder industries where, due to the extremely severe conditions with which valves are confronted, the Homestead has become standard.

Homestead Quarter-Turn Valves are also used extensively by the Federal Government for various purposes—who has been sending them abroad together with its other equipment which is going to the European battle lines.

With its added facilities, the Homestead Valve Manufacturing Company will be in a better position than ever to take care of rush orders promptly and, with its usual scrupulous attention, will endeavor to meet the requirements of its friends.

⁂

To the casual observer the motor truck industry seems to have attained to adult proportions. But people felt the same way about the railroads fifty years ago—when the first locomotives burned wood and ran on tracks made of iron strips bolted to wooden runners. So it is reasonable to believe that the motor truck, which is an invention of yesterday (so to speak), will advance as far in its day as the railroad has.

In commenting on the part that tires have played in the advance of the rubber-tired freighter, R. S. Wilson, Man- ., Motor Truck Tire Dept., The Goodyear Tire & Rubber Co., declares that oftentimes a new kind of tire or a tire improvement, has actually opened up whole new transportation fields for motor trucks and vastly broadened old fields.

"This has been particularly true in the case of our Hand-Attachable Truck Tire," says Mr. R. S. Wilson, "which is now bringing trucks into much wider use in small towns and rural districts.

s its name indicates, it can be applied to the wheel by hand, a particularly desirable feature in tire equipment. It has all the stamina and cushioning power of the pressed-on tire, and is independent of special machinery for applying. Hammer and monkey-wrench are the requisite tools for applying this type of tire.

"There is now no need for a truck owner in the smaller towns or in rural districts to ship wheels away for retiring. And for this reason many towns that formerly were without trucks are now five,- ten- and fifteen-truck towns. Thus is business permitted to run where it walked leisurely before.

⁂

Announcement is made that Carleton R. Dodge, recently of C. R. Dodge & Company, New York City, has accepted an appointment with the Lakewood Engineering Company, Cleveland, Ohio, as assistant sales manager in charge of the Philadelphia Territory. The new offices are on the Tenth Floor of the Widener Building.

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other
Tuesday by

Kenfield-Leach Company
445 Plymouth Court Chicago

Chicago, October 9, 1917
Vol. 51 No. 8

Leading Articles in This Issue

Cleveland-Mecca for Paving Brick Makers 662
Modern Clay Testing......667
Using Hot Gases from Burning Kilns to Dry Clay Ware......672
A Rate Menu......674
Monolithic Brick Slab for Dryer Roof 679
Tentative Methods for Ultimate Chemical Analysis of Refractories......681
Rate Fundamentals and Tariff Interpretations 683

* * *

The Editor's Corner......660

* * *

Special Departments

Machinery and Equipment......709
Pottery Notes......700
The Superintendent......685
Wake of the News......688

American Clay Mchy. 711, 713
American Pulverizer Co......725
Armstrong Mfg. Co......691

Baird M. & Mfg. Co......693
Baldwin Locomotive......723
Ball Engine Co......707
Barber-Greene Co......706
Barrett Company......715
Beighlee Electric Co......697
Bell Locomotive Works......696
Black Diamond......710
Bonnot Co......648
Boss Co., J. C......689
Brewer & Co., H......689
Bristol Co......694
Broderick & Bascom......687
Brown Instrument Co......658
Buckeye Traction Ditcher Co......709

Canton Grate Co......698
Celite Products Co......689
Chambers Bros. Co......651
Chase Fdry. & Mfg. Co......720
Clarage Fan Co......686
Classified Ads......732-734
Cleveland Alloys Co......716
Cork Insert Co......701
Crescent Belt Fastener......687
Crimora Manganese......689
Cyclone Grate Bar Co......695

Didier-March Co......722
Drymore System......690
Duplex Truck Co......690
Du Pont Powder Co......724

Engelhard, Chas......723
Erie Steam Shovel Co......707
Exner, J. E......699

Fate Co., The J. D......735
Freese & Co., E. M......729

Gandy Belting Co......705
Garnet Co......716
General Electric Co......657
General Store......716
Goodrich Co., B. F......686

Hardinge Bros., Inc......687
Harris Bros. Co......733
Hendrick Mfg. Co......720
Hettrick Mfg. Co......691
Hill Clutch Co......687
Homestead Valve Mfg......716

Illinois Boiler Cleaning Compound Co......716
International Clay Mchy......653

Jackson & Church Co......708

K-B Pulverizer Co......688
Keystone Driller Co......699
Kissel Motor Car Co......700

Lakewood Engr. Co......702
Lincoln Electric Co......655
Link-Belt Company......656

Main Belting Co......649
Manufacturers Equipment......650
Marion Machine Fdry. & Supply Co......688
Marion Steam Shovel......693
Morgan Co., F. W......686
Morse Chain Co......727

Ohio Filler & Shield Co......695
Ohio Galv. & Mfg. Co......721
Orenstein-Arthur Koppel......721
Osgood Company......720
Owens Continuous Tunnel Kiln Co......716

Philadelphia Textile Machinery Co......652
Potts & Co., C. & A......654
Price Electric Co......688

Roessler & Haslacher......696
Rollin Chemical Co......698

Sanderson-Cyclone Drill......688
Sauerman Bros......686
Sawyer Belting Co......724
Scandinavia Belting Co......686
Schofield-Burkett......722
Smith Co., Claude......647
Standard Dry Kiln Co......692
Steele & Sons, J. C......730
Stupakoff Laboratories......689
Sturtevant Mill Co......736

Thew Auto-Shovel Co......703
Thwing Instrument......692
Trade Names......717
Trautwein Dryer & Engineering Co......647

Union Chain & Mfg. Co......686

Victor Balata & Textile Belting Co......720

Wallace Mfg. Co......728
Watt Mining Car Wheel......694
Webner, Frank E......716
Weller Mfg. Co......646
Westinghouse Electric & Mfg. Co......725
Williams & Co., C. K......686
Wood & Co., R. D. ......Front Cover

Youngstown Steel Car......697

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

U. S. to Spend Two Million on Temporary Frame Structure

OUR READERS may or may not have noticed that both houses of Congress passed a bill a few weeks ago appropriating $2,000,000 for the erection of a temporary frame building on the site of the old Pennsylvania Railroad Station, Sixth and B streets, N. W., Washington, D. C., to be used to provide shelter for the overflow of clerks from the War and Navy departments.

Stop and think for a minute—$2,000,000 for a wooden structure—not an army cantonment. We are becoming so accustomed to talk about finance in "billions" that reference to "millions" seems to carry no more significance than "hundred thousand" did two or three years ago. We judge the government will be able to build a mighty nice frame house for $2,000,000.

At least one clayworking association, together with individual manufacturers, has gone on record as being opposed to the use of frame in the construction of this building. There is a generous supply of clay products available at the present time and it is our understanding that an army of bricklayers are out of employment. While the price of brick, hollow tile, terra-cotta, and other structural materials is somewhat greater than it was before the war, due to increased manufacturing costs, still we believe that the prices of these commodities when compared to lumber is not any greater than it was two or three years ago. Certainly the cost of bricklayer labor has not increased perceptibly. Over against this condition the price of lumber and the cost of carpenter labor are very high in many sections of the country. In addition there seems to be a scarcity of carpenters in countless locations, which includes Washington, D. C. If there was ever a time when burned clay can favorably compete with wood in the matter of costs it is the present.

In the face of these facts the government has seen fit to consistently overlook the fact that masonry construction can be erected at this time not only economically, but cheaply—and the result is a *strong* and *stable* structure, *not* a flimsy makeshift.

In addition to such a lavish expenditure for a temporary improvement, we are informed that the proposed location of the new structure is in a section now admitted to be one of the worst fire hazards in Washington. Besides endangering the lives of hundreds of employes, the erection of such a building in the location chosen adds proportionately to the fire risk for the whole section.

It is our understanding that the administration hopes that business as a whole will be conducted as nearly normal as possible during the national emergency. If this is not done the big war revenue bill just passed will fall far short of expectations. Lumber has received far more than its share of the army cantonment business. Ignoring the weight of arguments against such lavish temporary construction, as suggested above, namely, cost, permanence and fire resistance, Congress might have at least considered burned clay interests in this instance favorably from a selfish standpoint.

Do not get angry about this matter but remember that other similar cases may arise in the future. Write a strong letter to your congressmen protesting against such extravagance and unfairness. The burned clay industry is not making its importance felt in Washington. You are partly to blame. Speak your mind. Congressmen have a way of listening respectfully to the folks from "down home."

* * *

Business Looks Better

THERE APPEARS TO BE a rift in the dark clouds of building inactivity which have been hanging over the industry. Chicago face brick manufacturers and dealers report that there is more figuring going on now than during previous months and inquiries from contractors have taken on decided activity. In its October 6 issue, "Dun's Review" makes the statement that progress toward better business has been unmistakable in some important branches which recently experienced halting, and more optimistic views on the general situation are possible.

Brick and Clay Record has great confidence in renewed activity in building circles because basic conditions are favorable to it. We have repeatedly said that the nation is underbuilt, that people need houses, and that they are going to get them sooner or later regardless of temporary obstacles.

While there is some question as to the actual benefit to the prospective builder of the recent steel price cut, there is little doubt but that the action taken by the government will have a psychological effect. Since the causes of good times and bad are said to be largely psychological it might well be reasoned that conditions are rapidly shaping themselves in a form that will have a powerful psychological effect for another era of prosperity.

He Has Plenty of Money and Needs Buildings; Get After Him

CONDITIONS ON THE FARM are such that they should produce a very profitable market for clay products manufacturers this fall. The bumper small grain crops, as well as those of other varieties which have been unusually good, have been harvested and the farmer is either getting them to market or is preparing to hold them until they are needed. With the unusual high prices for all farm produce which prevail at this writing, the son of the soil is in a fair way to realize handsomely upon his summer's work. He is therefore in a good mood to consider new buildings which he has needed for some time or which present circumstances make imperative. The construction of brick and hollow tile barns, houses, out-buildings, silos, granaries and other structures, as well as tile drainage, should have a large part in his construction program during the next three months.

The "American Builder" in its October issue gives some very interesting comparative figures covering the cost of constructing various farm buildings before the war and now. It says that in 1914 it cost the equivalent of 1,580 bushels of wheat to erect a barn which today can be built for 818 bushels of the same commodity. In 1914 the cost of a silo was 285 bushels of corn; today it is 130 bushels. Thirty-six hogs were sufficient to equal the price of a commodious hog house in 1914, while today only twenty-one are needed. In 1914 the cost of an implement shed was ten per cent. of the value of the implements housed, while today the same structure can be erected for only six per cent. of their value. The cost of a comfortable farm home in 1914 was equal to the crops from 100 acres; today the crops from 35 acres are sufficient. While these figures undoubtedly cover frame building, the proportions are approximately the same for all sizes and quality of buildings. They can be made to apply to burned clay structures as well, a small additional sum being added for the cost of the more permanent type of construction.

In the light of these figures there certainly is very little reason for not building now. In fact, the "Homestead," of Des Moines, Ia., says in a recent issue:

"Building material has advanced in cost in the past four years and may continue to advance, or at least, continue to cost present figures until the end of the reconstruction period following the war. In considering the increased cost of building material, we must think of the use of the new 'yard-stick' of values—we can not consistently sell wheat for above $2 a bushel and at the same time insist on buying lumber at the low prices current before the war. We can not reasonably expect to sell by one small measure and buy in a large one. But we as agriculturists, are a most important factor in the prosecution of the war and are in a fair way to receive the lion's share of any benefit that can result from such a world catastrophe. In view of this and the great struggle we are engaged in, it would seem most short sighted to delay the erection of needed farm buildings."

Get after the farmer. He is a very good prospect. Call him up by phone. Send him some literature. Tell him what you have and what you can do for him. Take some advertising space in the farm journals or in local papers if you think that will help you, but do something.

The clay products manufacturer who is able to get to the farmer with his message and with his goods will have no need to complain about the condition of business this winter for if he goes about it rightly he will have more orders than he can possibly handle.

¶ *INSTRUMENTS USED IN DRYER CONTROL, a staff article that explains in detail the use of the anemometer, hygrometer, and thermometer in the regulation of tunnel dryers, will appear in next issue. It's an article that's full of "meat" for you; don't fail to read it.*

¶ *Another feature of unusual merit to appear in the October 23 issue is the continuation of Arthur E. Williams' article on MODERN CLAY TESTING, in which will be outlined the tests which clays, to be used for various purposes, should stand. Three absorption curves will also appear with this article, showing at a glance the burning properties of different classes of clays.*

¶ *As a little light reading, we have in store for you a very interesting, short article on THE HOLLOW TILE WALLS OF THE ANCIENTS, showing that the fat old politicians of Rome, more than 2,000 years ago, sweated off some of their surplus avoirdupois in baths constructed of this material.*

¶ *Here we are, bumped right up against the bottom of this space and haven't room to tell you of the other good things to appear. We'll have to leave it to you to see that you don't pass up the NEXT ISSUE.*

CLEVELAND—MECCA *fo*

All Faces in the Realm of Paving Brick Activity Are Turned Toward Headquarters for the Big Meet Scheduled for November 19 and 20. Problems Resulting from the War Will be Topics for Discussion

BACK TO CLEVELAND, the home of the N. P. B. M. A., the city of 600 miles of brick pavements, and the center of the paving brick industry in the United States—is the war cry of the National Paving Brick Manufacturers' Association, which has decided, thru its board of directors, to stage a "return engagement" by holding the 1917 meeting at the "Sixth City," on November 19 and 20. The 1913 convention, it will be remembered, was held at this point, between four and five hundred attending.

According to all predictions, the meeting is going to be a big one, with a larger attendance of manufacturers than at any previous gathering. And justly so. According to the decision reached by the board in its sessions during the early part of September, conditions are such that they call for something more than a demonstration-conference for manufacturers and highway officials and engineers. In the wake of the entrance of the United States into the world war have arisen difficulties and problems which demand the undivided attention of all interested in the manufacture and sale of vitrified paving brick.

TO DROP DEMONSTRATION FEATURE

This decision marks a radical departure from the custom of the past, which has been to couple the annual meeting of the paving brick manufacturers with a demonstration of brick highway construction designed to be of sufficient interest to the highway engineer and paving official to draw a large attendance from those classes. And they have been altogether successful. No doubt whatsoever of the efficacy of those demonstrations exists in the minds of the men who made the decision to drop that feature from this year's program. It has been ascertained that they have played an important part in forming a better conception of the stability and the strength of vitrified brick pavements in the minds of those men from whose pens come the specifications for our dependable highways.

However, the upheaval in our domestic conditions and the serious aspect of economic conditions affecting the industry, make it imperative, in the minds of the members of the board of directors, to adopt a program for this year's convention, the keynote of which will be an attempt to solve the specific problems which have been confronted by the vitrified brick industry since its last annual meeting.

Undoubtedly, as the board has decided, the best possible manner of doing this is to make the gathering one of manufacturers alone; to focus the attention upon problems which those manufacturers have encountered in the past year, and upon difficulties which may arise in the coming twelvemonth, rather than to dissipate the atten-

PAVING BRICK MAKERS

* * *

November 20 Will Be a Special Conference Day for All Paving Brick Makers, Whether Members of the National Paving Brick Manufacturers' Association or Not. A Dinner is Being Arranged for 19th

* * *

tion over the field of a conference for betterment of business conditions and a demonstration for engineers and highway officials.

Steps will be taken at the coming meeting toward making the industry of the greatest possible benefit to the government in the conduct of the war and to assist in a solution of the serious transportation problems which exist, as well as to maintain the industry on as substantial a base as is possible thru this present emergency, so that it may contribute proportionally to the industrial stability of the country in the present crisis.

PROBABLY ASSOCIATION'S MOST IMPORTANT MEETING

Because of the seriousness of the situation, the next meeting will probably be the most important ever held by the National Paving Brick Manufacturers' Association, and is one which every paving brick manufacturer, from coast to coast, should make a great effort to attend. The questions which will be discussed are vital, and will have a very definite bearing upon the welfare and progress of the industry during the period of great stress which is rapidly developing.

Will P. Blair, the able secretary of the association, in commenting upon the coming gathering, said: "The opportunity afforded to the paving brick industry to be of inestimable benefit to the country at large, by aiding in the solution of the difficult problem of transportation at present being encountered, takes front rank in the reasons why this is a time of all times when all active members, members of firms, executive officials, and boards of directors who have a deep interest in the success of the paving brick industry, should meet together with the fullest representation, exchange views, and to reach conclusions, if possible, to better the present situation and to plan wisely for coming eventualities."

In a letter sent out by the office board, composed of C. C. Blair, J. G. Barbour and C. J. Deckman, announcing the dates of the meeting and the character of the program, it is pointed out that there are many important points which demand the immediate attention of the manufacturers. "The brick industry," it states, "is imperilled on the one hand from a lack of contractors, and on the other, difficulties are intensified by competing materials having a contracting organization, active, capable and dependable, which even shares the burden of promotion."

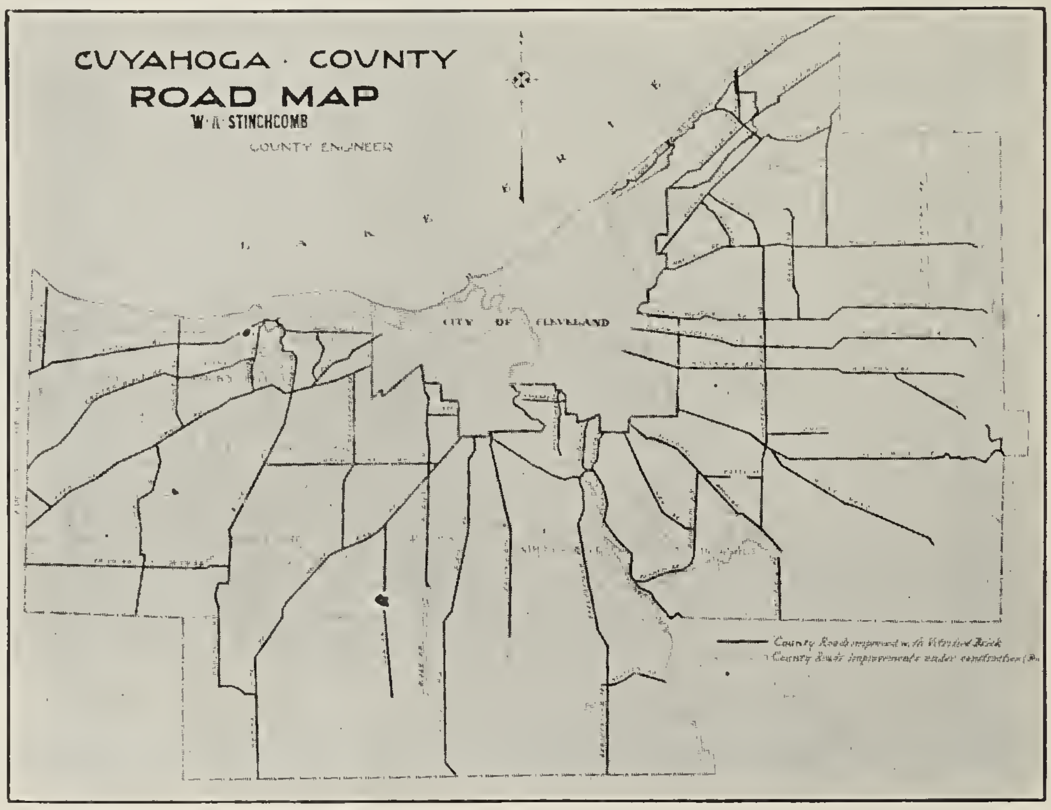
The letter in full is as follows:

"The annual meeting of the National Paving Brick Manufacturers' Association, during the last few years, has been made an occasion for demonstrating to the public thru a large number of invited guests from various parts of the country, the value and methods of using paving brick in roads and pavements. The ability of these annual efforts to create in the public mind a preference for brick for such purposes, has been of inestimable benefit.

UNFORSEEN HANDICAPS ENCOUNTERED

"But this year finds the industry confronted with unlooked for and unforseen burdens and handicaps, due to the great war in which we are engaged. While freely acknowledging our first duty to be in the interest of the nation as such, no one will deny but that our second duty lies in maintaining our commercial interests to the highest point for individual benefit, for upon this basis alone we are enabled to contribute support to our country. Private enterprise embraces within it the entire strength of the country. As private interests become weak, the country becomes so.

"Many lines of business in the country that were struggling for existence are now enjoying unusual prosperity. Other lines of business considered stable and steady have been shaken, and almost all lines have been disturbed in one direction or another. Some matters connected with the business which have heretofore been regarded as petty annoyances have developed to large proportions. Business interests involving various lines are becoming aroused to the need of doing all within their power to restore as far as possible, normal conditions, surmount immovable difficulties, and to discern what is best for the future. They are therefore getting together as never before in conferences, exchanging views, and reaching conclusions, if possible, to better the present situation and plan wisely for coming eventualities.


CUYAHOGA · COUNTY
ROAD MAP
W·A·STINCHCOMB
COUNTY ENGINEER
CITY OF CLEVELAND
County Roads improved with Vitrified Brick
County Roads improvements under construction

Altogether Cuyahoga County Has 1,000 Miles of Brick Pavement, 600 Within the Limits of Cleveland and Its Municipal Suburbs and 400 Miles In Its Rural Section, a Map of the Latter Roads Being Shown Above.

"Just what to do to supply needed labor or a substitute therefor, to keep cost production from enforcing a price which the public will not pay, might be supplied in whole or in part by combining the ingenuity of all.

PAVING BRICK INDUSTRY IMPERILED

"The brick industry is imperiled on the one hand from lack of contractors, and on the other, difficulties are intensified by competing materials having a contracting organization, active, capable and dependable, which even shares the burden of promotion.

"Are the interests of paving brick receiving at the hands of every one interested, that full protection in their use necessary to carry continued favor?

"Is the industry fully equipped to take advantage of a transportation shortage and make of it, upon a broad basis, our own opportunity?

"Again, is the vision of the industry as clear as might be in grasping advantages from extraordinary destruction of roads of less valuable type which is due to recent traffic intensity, over the many miles of roads which have cost so immensely—not in maintenance—but in futile attempts at maintenance?

"The complex situation arising from the country's requirement for the greatest transportation facilities—with that very need hindering the delivery of material and delaying work which would furnish the relief, with the Council of National Defense recommending short haul freight to be transported over highways—which are not—presents a problem seldom found in business experience.

"The market is within reach, but out of grasp.

"With these views in mind, the office board of the National Paving Brick Manufacturers' Association is convinced that more good to the industry can be effected by a conference in which the entire industry is represented by its active executive officials than by any other undertaking.

GENERAL CONFERENCE SLATED

"In connection with our annual meeting, a general conference of the paving brick industry will be held at Cleveland, Ohio, on November 19 and 20, 1917. In addition to the attendance of our active members, all members of firms, executive officials, and boards of directors who have a deep interest in the success of the paving brick interest are invited and urged to attend.

"Co-operation on your part, therefore, is urgently requested to make this the most profitable meeting ever held in the interest of the industry."

It is hardly necessary to emphasize the importance of this meeting, and the necessity for attending it, further than has been done in the preceding letter. If this emphasis is required, however, it can be supplied in a few very pointed questions which the office board is asking the members of the association. How much of the $288,000,000 expended upon road improvements during 1916 went into the construction of permanent vitrified brick pavements? How much of the improvement which cost this vast sum will endure against use and climatic conditions for one, two, or three years?

CO-OPERATION ONLY KEY TO BETTER CONDITIONS

The country's great need for a more adequate highway system constitutes a great opportunity for the paving brick industry to be of material assistance to the government, and, inadvertently, to capitalize on an unusual opportunity. Is it within the power of paving brick manufacturers to show that brick roads are the surest, the quickest, and the only relief? It can be done, but surely not by localized and random efforts, claims the office board but only by the close organization, unity and concert of action urged by the Council of National Defense.

Inasmuch as the interest of the paving brick business in its future relationship to the country needs the advantage of the conference which has been called, it is essential that all manufacturers of paving brick give the meeting their heartiest co-operation, and by so doing make it worthy of its purpose. The importance of the subjects to come under discussion, and the issues to be decided upon make it almost imperative that those who are financially interested in the industry, but who have, in the past, been passive in its management, to lend their support.

CLAYWORKING IN CLEVELAND

As for the city in which the big meeting is to be held, little need be said. Past conventions of the different clayworking associations have been productive of unlimited descriptive matter regarding the "Sixth City." The fact that the 1913 convention of the National Paving Brick Manufacturers' Association was staged in this beautiful municipality is sufficient assurance that its attractions are comparatively well known. Just a few words reviewing the status of the industry at that point may, however, prove of interest.

Cleveland is the center of the paving brick industry of the United States. Five individual firms and corporations maintain paving brick plants within Cuyahoga county that employ in plant equipment and operation a capital amounting to approximately $1,500,000.

Cuyahoga county is known internationally as the best paved rural section in the world, and brick pavement is used almost exclusively for its 400 miles of improved highway. There are, in addition, 600 miles of brick pavement in Cleveland and its municipal suburbs, making a total of 1,000 miles of brick pavement in the county.

The manufacture of clay products in Cleveland, is extensive and rapidly increasing. Fifteen million face brick, 30,000,000 paving brick, and 250,000,000 common brick are manufactured in Cleveland yearly, and these industries employ 1,500 men. Two hundred thousand tons of hollow tile are produced annually.

In the building operations of Cleveland there is used yearly not less than the equivalent of 383,000,000 common brick, all of local manufacture.

⁂

Nebraska Plant Re-opens

The plant of the Table Rock (Neb.) Brick & Material Co., which has been inoperative for many years, was placed in operation on September 19. F. A. Stech and E. F. Hanel, president and cashier of the Community State Bank, recently opened at Table Rock, organized the new company with the assistance of Willis C. Fellers, formerly connected with the old company. The officers of the new concern are named as follows: F. A. Stech, president; W. E. Fellers, vice-president; E. Hanel, secretary, and J. N. Phillips, treasurer. R. W. Beesley, formerly manager of the sales department of the Hydraulic-Press Brick Co.'s Omaha office, is the manager, and J. W. Tomek, of Table Rock, assistant manager of the plant.

The opening of the plant took place amid considerable ceremony. In the afternoon between twelve hundred to fifteen hundred school children visited the plant and a reception was given by the Commercial Club of Table Rock to the officers of the company and general public. When the wheels began to turn at five o'clock, the superintendent gave a talk to the school children explaining to them the machinery and the methods employed in brickmaking. In the evening a banquet was served, at which there were one hundred and forty present.

The present capacity of the plant is 35,000 brick a day. Hollow tile and face brick, it is said, will be added to the list of products manufactured.

New Jersey Clay Production in 1916

The total production of clay mined and sold in New Jersey in 1916 amounted to 371,916 short tons, valued at $790,796, according to statistics collected by State Geologist Henry B. Kummel, in co-operation with the United States Geological Survey. This is an increase over the preceding year of 31,190 tons and in value of $172,892. The most important variety of clay produced was fire clay, which amounted to 264,033 short tons, valued at $585,230, an increase over 1915 of 36,220 tons in quantity and $172,877 in value. The other varieties produced were stoneware clay, 8,286 tons, valued at $22,388; ball clay, 6,318 tons, valued at $26,397; brick clay, 22,074 tons, valued at $17,880, and clay for miscellaneous uses, 71,203 tons, valued at $138,901.

⁂

Brick Yards to Figure in Rebuilding France

The American Red Cross, as an experiment in rehabilitation work in France, has undertaken to reconstitute sixty families in each of the four villages in territory evacuated by the Germans. For this work the Red Cross war council has made a special appropriation of $403,090. The work has been placed in charge of Home Folks, of New York, an expert in public health work.

In reference to those efforts at rehabilitation, Mr. Folks has just reported as follows:

"Our feeling here is that we should aim to give the dweller in the devastated regions a shelter which will keep out wind and weather for two or three years, during which period he will have time to get on his feet and do his own permanent reconstruction work. However, owing to the location of materials and the transportation situation, we may often find that we can at less cost do concrete construction work or brick work than wood work, and under these circumstances we should do that kind of construction which is cheapest.

"We plan, for instance, to establish at various points in the devastated regions brick yards. Thru these yards we can supply brick for construction purposes at a much cheaper cost and much more rapidly than we could furnish lumber for contractors' shacks. In every case our governing principle will be to spend the least possible money in the least possible time in providing a dwelling for a given individual family.

"I may add that I am very hopeful that we can put a great many people under shelter simply by repairing those houses which have merely shell holes in the roofs and in the walls. In many cases the beams which unite the top walls have been cut away by the Germans, so that the tendency of the roofs is to thrust the walls apart, but I believe we can tie the walls together with steel or wire from the wire entanglements and military work in the neighborhood. By following such a program as I have outlined, I believe that with great speed and with very small expense we can make livable a substantial number of houses in the course of the next few months."

⁂

Duty Government Owes Business in War

After defining the duty business owes the government in the present war, a committee of the Chamber of Commerce of the United States co-operating with the Council of National Defense gives the reverse of the situation by discussing what government owes business. The expression is brought forth in the latest of a series of war bulletins which this committee, of which Waddill Catchings, of New York, is chairman, has been issuing.

"The duty business owes the government in war has been clearly stated," the committee bulletin declares. "Business must 'dedicate to the nation every facility it has developed and every financial resource it commands on such terms and under such circumstances as our government shall determine to be just.' Business owes the duty to submit unhesitatingly to such regulation and control by the government as may be necessary to concentrate the industrial resources and energy of the country toward winning the war.

FEDERAL OBLIGATION TO COMMERCE

"The duty which the government owes business is equally clear. The government owes business the duty of wise and constructive leadership. The control over business carries with it the responsibility that the control be exercised in a manner to produce the results desired and to impose no unnecessary hardship."

The bulletin continues that when the government says what business shall be done, what prices shall be charged, and how production shall be distributed there is created a new system of production and distribution and there is brought to an end the old system understood by business men, that is, the system of production and distribution by price. The opinion is expressed that the new system must be developed quickly to replace the system no longer in effect and this new system must be made clear to business men so that they may know each day how to meet the problems of business.

What business may do to help win the war is being determined by the government, it is said. Concentration of industrial energy and resource will come about to the full extent only if the government affords the necessary leadership is the further assertion.

BUSINESS IS AT GOVERNMENT DISPOSAL

"In meeting this great responsibility the government can command the full help and assistance of business," the bulletin goes on. "Side by side the problem may be worked out in mutual co-operation. With the full power to compel any business man to put aside all selfish desire, the government may forget the controversies of the past and have the benefit of all helpful knowledge and experience of business.

"The struggle of the nation brings about a common purpose and in creating the conditions under which business is to be done during the war, the government can use without reservation the services of men who know business, its infinite ramifications, its delicate sensitiveness.

"Business says to the government 'your buying of vast quantities of war supplies, your control of prices and distribution creates a new world for business. Not a moment is to be lost in clearing up the situation by giving us full knowledge of the new system of production and distribution upon which our very business life depends.'

* * *

Speed in Constructing Brick Pavements

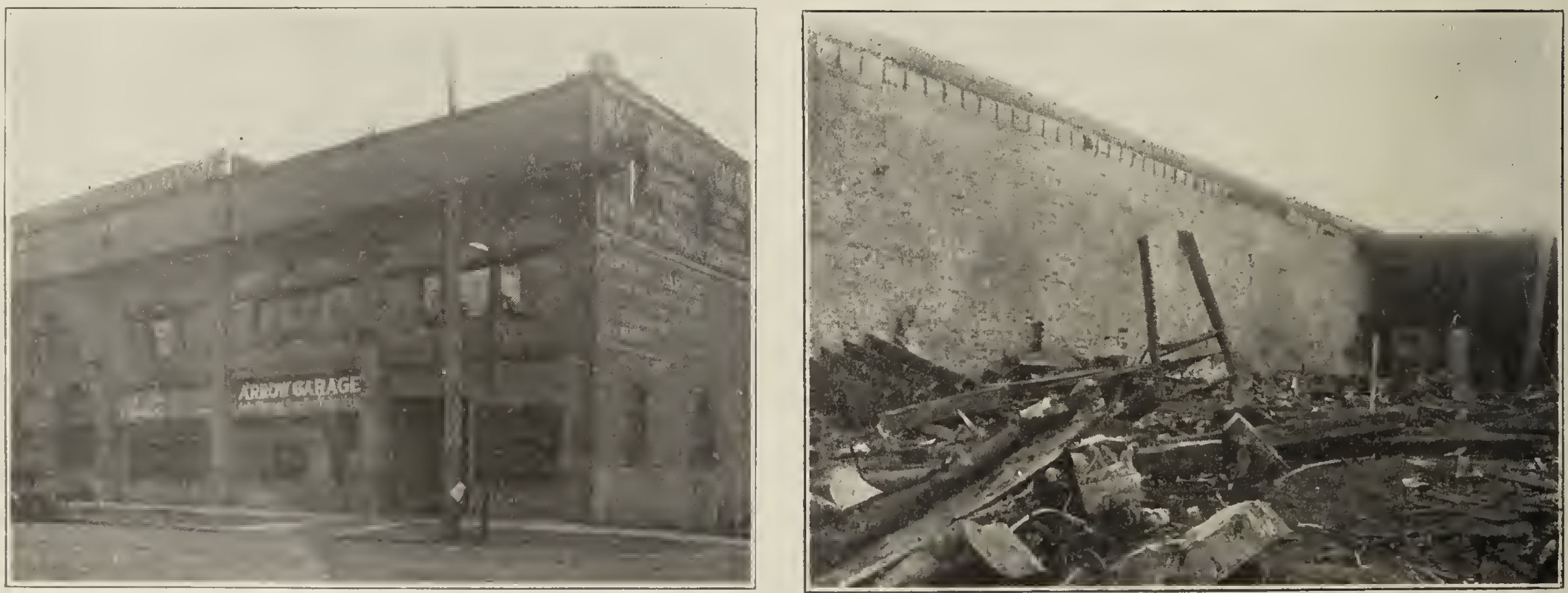
From 800 to 1,000 feet of 16-foot monolithic brick pavement a day is "going some," yet one contractor has found a way to do it. He is C. F. Green, of Marion, Ind., who has gotten together a fairly permanent gang of about twelve men who specialize in laying, rolling, and grouting brick for the monolithic and cement-sand cushion types of brick pavement.

With this gang he takes subcontracts for that part of the work. The principal contractor lays the concrete foundation and the subcontractor follows as closely as working conditions will permit with the bricklaying. The subcontractor takes all the risk of delays to the concreting plant. Nevertheless, the scheme has worked out very well and both contractors appear to be profiting by it.

The two principal men of the gang, who can lay brick about as fast as it is possible to lay them, get fifty cents an hour, and the subcontractor is constantly on the job to see that the rest of the gang get the brick to them. A gravity conveyor helps in supplying them. The grouting is done by a process which makes for speed, if possibly not for the best joints. The grout is mixed in a large, square, two-wheel, flat-bottom trough or pan in one-bag batches. Two men with hoes do the mixing, and then the grout box is turned on end and the entire batch allowed to run out over the pavement where a single man with a four-foot squeegee does the spreading.—*"Engineering News-Record."*

* * *

BRICK WALL BAFFLES BLAZE



Altho the Intensity of the Flames Which Caused the Destruction Pictured Above Was Sufficient to Melt the Glass from the Windows, to Twist and Bend Iron Pipes, and to Completely Destroy the Automobiles Stationed in the Garage, They Beat in Vain Against the Solid Brick Wall Which Separated Them from Further Prey. While the Conflagration Was Raging, Business Was Going On On the Other Side of that "Fire-Dike." Note the Mangled Body of An Automobile in the Picture on the Right.

MODERN CLAY TESTING

The First Section of a Very Exhaustive and Authoritative Article on the Subject of Clay Testing for Properties and Possible Uses, Which Will Appear in Two Parts.

By Arthur E. Williams

Associate Ceramic Chemist, U. S. Bureau of Standards, Pittsburgh, Pa.

CLAY TESTING, in a scientific manner, planned to fit the needs of an American manufacturer, is a relatively new development. In the beginning the number of the tests were few, the apparatus not well developed, and the results did not tell enough to accurately distinguish a good clay from a poor clay. At the present time, however, established ceramic laboratories have developed methods which show the important qualities of a clay. They have tested clays of all types and in part at least have standardized their methods and have had the necessary experience to correctly interpret their results.

The object of clay testing is to determine the uses to which a clay may be put and the precautions necessary to observe in bringing the product to a successful completion. The most general purposes for which clays may be tested are:

1. Clays for hollow ware: Drain tile, sewer pipe, and hollow blocks.
2. Brick: Building brick, face brick, and paving brick.
3. Bond clays: Crucibles, glass pots, and fire brick.
4. Refractory clays.
5. Stoneware pottery clays.
6. Terra cotta clays.
7. Pottery clays: White ware and porcelain.
8. Fillers for paper, paint, soap, etc.

The properties of clays which may be determined by testing, some or all of which are necessary to find the value of a clay are:

1. Fineness of grain.
2. Freedom from sand and other granular impurities.
3. Plasticity.
4. Working properties.
5. Drying properties.
6. Bonding power.
7. Burning properties.
8. Physical properties in the burned state.
9. Chemical composition.

The most important qualities of clays for most purposes are those made evident during the process of burning. These will be taken up in detail under the discussion of "Burning Properties."

METHOD OF SAMPLING

The value of any clay test will, of course, depend upon the method of sampling. Clay samples must be carefully taken to insure dependable results. If the samples are to be taken from a clay which is being worked, a ground sample as it enters the pugmill is the most satisfactory. If the clay is not being ground at the time, but the entire face of the bank is exposed, the sample is best taken by cutting a strip about 6 inches wide by 3 inches deep from top to bottom of the face, grinding and thoroly mixing all of the clay loosened up. If a new bank is being prospected, it is of course, desirable to take sample from various points on the land by means of sink holes, to insure the presence of a reasonably uniform raw material; these several samples of course, being tested separately.

It is very important that a clay sample should represent the cross-section of the clay bank being worked, or as it is expected to be worked. The question of economical location of a clay bank will not be considered in this discussion.

Many clays have certain properties which a preliminary examination of the raw sample makes evident, and which makes them inherently objectionable for the manufacture of any kind of clay products. The most common of these are large lime pebbles or an excess of calcium carbonate in a finely divided state, or a clay of a sandy granular nature, having very little bond or strength when molded. These qualities may be quickly shown by the use of a few simple chemical and physical tests, and the examination of hand specimens. Some clay samples may in this manner, be disqualified for use very quickly.

It is desirable to have clay samples delivered for testing in a condition of moisture content and size of material similar to the conditions which they will come from the mine or clay pit. The possibilities of grinding and preparing the clay for molding and the type of machinery best adapted to the partcular clay, are to a considerable extent a matter of judgment and experience. Therefore, the closer the sample represents the conditions of mining, the more correct will be the opinion regarding its working qualities.

The tempering qualities of a clay depend upon the rapidity and completeness of the slaking process. Some clays break down and become plastic in water at a very rapid rate, others at a very slow rate, and still others do not become completely free from coarse, gritty materials. Those slaking readily may be quickly tempered with an even moisture content. Those slaking slowly should have a thoro and long process of tempering, else the moisture content will not be uniform thruout the ware, and considerable trouble from drying breakage and lamination may result.

The property of plasticity in a clay is one which is very difficult to accurately measure and at the present time for most clay testing the degree of plasticity of a clay is entirely a matter of judgment and experience. Plasticity in clays produced by the addition of water to the raw mass is a peculiar and individual property, and one *which distinguishes clays from all other earthy materials.* It is at the present time considered to be produced by a considerable quantity of fine grained materials, a large portion of which may be colloidal substance. This latter may be from various sources, such as various hydrous aluminium silicates, hydrated silicic acid, organic matter, etc.

The various attempts to measure this property have been made by the use of some mechanical device to determine the strength and stretch of clays in the plastic condition, by determining strength when dry, or by determining the amount of collodial material present by such methods as the absorption of dyes. Whether the plasticity of a clay is suitable for working in machines for forming clay products of any kind may, however, be readily judged by simply working the clay with water in the hands. The desire to measure the property of plasticity absolutely is because of the desire to explain this property scientifically.

> ¶ *Your first tendency upon glancing thru these pages will be to turn them over without reading any more than the title.* ***DON'T DO IT.***
>
> ¶ *Too many clay products men take this subject to be too elementary to receive much attention. However, the fact remains that many thousands of dollars have been ill-advisedly spent because of lack of sufficient tests of the clay to be exploited.*
>
> ¶ *The article presented herewith is written by a man who has done considerable clay testing for prospective plants and plants already erected and, thru this experience, has been able to learn those points which should be given greatest consideration before developing any clay deposit.*

DRYING

One of the most important properties of a clay is its ability to dry safely and rapidly when shaped in any form. At the present time a new clay prospect should show drying properties suitable for the manufacture of a varied product, rather than be useful only for the present intentions of the investors. This is especially true of clays from which structural materials are to be made, and where rapid production is a most important factor. A clay of this type should not be considered a commercial possibility if it will not dry safely in thirty-six hours. To be a really desirable clay it should, when made into brick or hollow block, dry safely in from eighteen to twenty-four hours.

Until quite recently our methods of testing the drying properties of clay have been rather crude and more or less a matter of judgment. The Bureau of Standards has, however, recently developed an apparatus which compares the drying properties of clays very well by actually determining the rate at which a clay will give up its water content, and the rate at which it shrinks. Therefore, laboratories having such an apparatus standardized against well known clays may be able to determine the ability of a clay to dry with considerable accuracy.

In general, this method consists in preparing two cylindrical pieces of clay, two inches high and 3.14 inches in diameter. These pieces are brought to constant moisture content at a temperature of 62 deg. Cent. and the weight then determined. They are then placed in a specially constructed dryer, where the temperature and circulation of air are kept constant. The apparatus is arranged so that a continuous record of shrinkage and loss in weight of the two cylinders may be simultaneously obtained. The greater the rate of loss in weight from the time drying begins to the time shrinkage ceases, the easier will this clay be dried. Also, the less moisture necessary to remove before shrinkage ceases, the easier will the clay be dried. By testing clays which dry easily and clays which give considerable difficulty in drying without cracking, an apparatus may be thus standardized so that the results may be correctly interpreted. The method of interpretation which seems most desirable is to determine a factor denoting the mean value of the drying shrinkage covered by the time between the origin of the curve and that time which shrinkage has ceased. This expression gives the average per cent. of shrinkage in relation to the time of drying. The greater the value of this factor, the more difficult does the clay dry. Products such as crucibles, glass pots, refractories of any sort, terra cotta, and pottery are made from prepared bodies containing two or more clays, and their drying properties do not depend upon the drying properties of any one clay.

WARPING

Warping during drying usually occurs with clays having a high shrinkage. If the clay is to be used as a bond clay, the warping will make no difference. If, however, the clay is to be used for roofing tile, hollow blocks, or hollow tile of any kind, it must not warp during drying. This property is best tested by simply working the clay to a plastic mass, free from air bubbles, and form it into long narrow strips about 8"x1"x½"; lay them on a perfectly flat surface and dry them at a temperature of 60 deg. Cent. (140 deg. Fahr.). The clays which have a tendency to warp, will curl up from the pallet to a greater or less extent.

BONDING POWER

In the manufacture of refractories of any sort, under which may be included crucibles, glass pots, fire brick, and special fire clay shapes, the bond clays used are nearly always less refractory than the ware is required to be. It is, therefore, very desirable to use as little bond clay as possible and still form the ware into refractory products. This quality in clay is best tested by making up rectangular bars, rather long in proportion to their cross-section, consisting of the raw clay, plus increasing proportions of a standard testing sand, such as is required for a standard test of cement. When these briquettes are dried, their cross breaking strength is determined and their modulus of rupture calculated.

The most famous bond clay known is not an American, but a German clay called Klingenberg Clay. This clay has very peculiar properties regarding its bonding power, showing considerably more strength when having 50 per cent. sand mixed with it, than when no non-plastic material was added. It is also a very satisfactory clay from the standpoint of refractoriness. Another clay from Gross Almerode has been used as an ingredient in all glass pot manufacture in this country. One of the greatest problems presented the Bureau of Standards since the beginning of the war has been the discovery of suitable substitutes for these two clays.

In determining bonding power, the conditions of drying should be carefully controlled and uniformly carried out, if comparative results are to be obtained.

A method recommended for the determination of the modulus of rupture by Kerr, Montgomery, and Fulton (Transactions A. C. S. Vol. 17) is as follows: Bars of clay are air dried for seven days, and then dried to constant weight at 75 deg. Cent. and further to constant weight at 110 deg. Cent. These are cooled and broken in a standard make of modulus of rupture machine. One of the shot type, breaking with load between 8 and 700 lbs. is the most desirable type. After the test pieces are broken the thickness and width should be measured with micrometer calipers to 0.001. The extreme fiber stress, or modulus by rupture is then figured from the regular formula;

$$\frac{3\ PL}{2\ BD^2}$$

where:

P = a load applied in pounds.
B = width of test piece in inches.
D = thickness of test piece in inches.
L = distance between supports in inches.

The maximum strength in terms of modulus of rupture shown by an American clay without sand is 520 lbs.; with 50 per cent, sand, it is 400 lbs. The minimum strength of a clay which may be considered suitable for a bond clay with or without sand is 300 lbs. The strength of a German pot clay is 563 lbs. per sq. in.; with 50 per cent. sand, its strength is 399 lbs. per sq. in. The reason why it is important to know the strength of these clays when they are mixed with 50 per cent. of non-plastic material is that bond clays are always used to bind together from 40 to 60 per cent. of non-plastic material when refractory bodies are made with them, and, also, because of experimental difficulties due to cracking in drying.

¶ *The first part of this paper and the part which appears in this issue embraces the following important topics:*

¶ *Too frequently the tests made on new clays are not sufficiently exhaustive. The properties that should be tested for are clearly indicated.*

¶ *The requirement that a clay be able to dry rapidly without loss is an often overlooked factor among the drying properties of a clay.*

¶ *The proper mode of preparation of samples for burning tests and the procedure to follow in burning are subjects well treated in this article.*

¶ *A multitude of other properties to be regarded in clay testing are included. Among these are—well, read the article.*

BURNING PROPERTIES

The most important qualities of any clay are made evident during the burning. Action of a clay under heat is determined by the following method:

Briquettes of the clay 1"x1"x3½" are made by thoroly tempering the clay and molding it, either in brass molds, or thru a die on a screw press machine. All samples should be made of a uniform density. These are weighed and measured for length when wet, or lines marked on them a definite distance apart. The briquettes should then be carefully dried, weighed, and measured again *for drying shrinkage* and placed in the kiln in a convenient form for drawing samples at various temperatures during the burn. During burning, the gas conditions of the kiln should be kept oxidizing and uniform to give comparative results, both in one burn and between various burns.

It will be readily seen that if all clays are tested in a uniform manner the qualities of new clays may be easily compared with the qualities of clays which are now being successfully made into various products.

In burning the clay samples, the temperature should be raised at a uniform rate, but this rate may vary thru different stages of the burn. A proper scheme of heating up thoroly dried samples is:

Three hours to 400 deg. Cent.; six hours from 400 to 700 deg. Cent. A trial should then be drawn and broken to determine the amount of black core. If any is present, the clay should be heated slowly from 700 to 750 deg. Cent. in three hours, and another sample drawn. If black core remains, the kiln should be held at 750 deg. Cent. three hours longer, maintaining a thoroly oxidizing fire and then another trial drawn. This should be continued until the black core has disappeared. The kiln may then be raised to 1,000 deg. Cent. in two hours and another trial drawn.

QUALITIES SHOWN BY BURNING TEST

If this trial shows that the clay is becoming considerably harder and denser, trials should be drawn every twenty degrees, raising the temperature twenty degrees an hour. If the clay is still very porous, the temperature should be raised to 1,060 deg. Cent. before another trial is drawn, heating up the kiln at the rate of 20 degrees per hour, after which temperature trials are drawn every 20 degrees until the clay begins to show signs of fusion or overburning. From clay samples burned in this manner with some other tests for special purposes, the following qualities of a clay may be determined:

1. Rapidity of oxidation.
2. Burning color at various temperatures.
3. Burning shrinkage at various temperatures.
4. Loss in weight.
5. Possibilities of flashing.
6. Rate of decrease in porosity and absorption.
7. Minimum porosity clay will show.
8. Safe burning range.

9. Rapidity at which a clay overburns.
10. Refractoriness of a clay.
11. Toughness and strength of material when burned.
12. Class of ware for which clay is most suitable.

The rapidity of oxidation determined by the method noted above shows us whether a clay needs to be carefully watched at the temperature at which it is best oxidized, or whether we may push the process of burning along rapidly to the finishing temperature. If a clay oxidizes slowly the maximum speed possible to burn it is very much reduced. The actual time necessary to wait is best determined by another burn using full size pieces of ware. A great many clays being burned today in commercial kilns are of a class which are difficult to oxidize, but this factor is oftentimes unknown to the burners because of the slowness of the entire burning process; to other clays sufficient time is given for this purpose and the kiln hurried along thru the remainder of the process.

This quality in a clay is exceptionally important to determine at the present time in the investigation of new clay prospects, for in addition to the continuous kiln, the tunnel kiln should now be considered as a promising type of kiln. In these kilns clay is introduced, burned, and cooled within seventy-two hours, as against a minimum time of four and one-half days which is about the best speed which can be obtained in burning a down-draft kiln of brick. If the tunnel kiln is to be used for burning clay wares, the clay made up into brick must stand watersmoking, oxidation, and burning to the proper degree of vitrification within a period of forty-eight to fifty-four hours, and stand to be cooled in from eighteen to twenty-six hours.

It is, therefore, evident that no time can be taken to oxidize a clay burned under such conditions. It must be practically free from materials requiring oxidation. Tests have been made on Illinois shales made up as brick to determine their maximum speed of burning, and they have been successfully burned and well vitrified within forty hours, without any sign of damage to the brick, thus showing that the requirements may be met.

BURNING COLOR AT VARIOUS TEMPERATURES

Clays to be used in the manufacture of white ware pottery or porcelain, provided they possess sufficient bonding power, are valued chiefly in accordance to their whiteness. Thus, the color obtained during burning is the most important factor of the test. In the testing of red and buff burning clays, the brightness of the red color, whether the buff clay shows a tendency to black speckle, and whether the clays are free from scum are all important in judging to what uses the clay may be put.

BURNING SHRINKAGE

Shrinkage of clays at various temperatures is determined by measuring each trial. A curve may be drawn plotting the per cent. of shrinkage against temperature which shows us the temperature at which maximum shrinkage takes place, whether the rate of shrinkage is constant or increases at a rapid rate, and at what temperature the body begins to swell rather than shrink. This latter point indicates the beginning of overburning.

The burning shrinkage is important to know in clays for brick and tile to aid in controlling the size of the finished ware. In the making of refractories it is necessary to determine where shrinkage ceases to be able to properly burn the calcined portion of the mixture.

In testing clays, the procedure is: First, to examine the trials for the color, shrinkage, and any other visible peculiarities they may show and then to proceed with the process of determining their porosity. By making this determination for each sample drawn and plotting a curve of the porosity against the temperature, the most important properties of the great majority of clays are revealed.

It is rather important to note the loss of weight in clays during the drying and burning. From these factors one may often decide whether it will be cheaper to ship a clay raw to a point where a better freight rate on the finished product is available or whether it is more desirable to locate the plant at the bank and pay the higher rate on the finished product. It is also useful in predetermining the rate of the finished product for the purpose of calculating the quantity required for capacity carloads, etc.

DETERMINING POROSITY OF CLAY

The method of procedure to determine porosity of a clay is to dry the briquettes at 110 deg. Cent., weigh them, immerse them in water and boil for four hours, after which they are put in hot water under a strong vacuum (when possible), and any remaining air in the pores is removed and replaced by water. After this is done the briquettes are again weighed wet, and then weighed suspended in water. Having these three values we can then calculate porosity from the following formula:

$$\frac{W-D}{W-S} \times 100 = \text{per cent. porosity,}$$

where

W = wet weight.
D = dry weight.
S = suspended weight.

By observing the porosity curve one may first consider the rate of decrease in porosity, which is a direct index of the rate of vitrification. A clay showing a slow and uniform decrease in porosity when it is between seven and zero per cent. porosity, or in other words, in the latter stages of the burning process, would be classed as a safe and easy clay to burn. If one considers this factor with reference to a kiln of vitrified tile or brick, one would be able to say that this clay was of sufficiently wide range to allow the temperature at the bottom of the kiln to be high enough to produce a vitrified product without the top of the kiln being overburned or warped out of shape. In the case of face brick it allows the use of extreme reducing conditions to make very dark flashed brick without the danger of the ware warping or twisting. A clay having this slow and uniform rate is necessary, along with other qualities, for the production of any ware requiring a high degree of vitrification, such as sewer pipe, stone ware, paving brick, and vitrified face brick. If a clay shows a rapid decrease of porosity its value is limited to those products in which vitrification is not essential, such as drain tile and partition tile.

All clays will not burn to a low minimum absorption. As certain classes of ware require a maximum of 1 per cent. others 3 per cent., and still others possibly 7 per cent. absorption, they can only be made from a clay burning to that density, and it is, therefore, necessary to determine the minimum absorption a clay will show. The average absorption of various classes of building brick recommended by a committee of the Society for Testing Materials was for class "A" not over 5 per cent., class "B" not more than 12 per cent., and for class "C" not more than 18 per cent. Thus, some clays may be able to make all three grades and others only class B or C.

Absorption cannot be used as a true index of strength, but a clay must be burned to an absorption showing approximately the absorptions required for various grades of material or the necessary strength is not attained. Clays for producing a vitrified material should burn to an absorption of 5 per cent., for hard burned materials 7 to 12 per cent., and for soft burned materials 12 to 18 per cent.

VESICULAR STRUCTURE FOLLOWS MINIMUM ABSORPTION

When the minimum porosity of a clay is reached during burning, the clay will either immediately become more porous, showing a spongly structure just beneath the surface, or it may stay at this minimum porosity over a range of 40 degrees to 200 degrees Fahr., before increasing in porosity again. Technically, this porous spongy structure beginning to develop is called a vesicular structure, and is due simply to the fact that it is the temperature where visible fusion and deformation take place. If the clay were burned to this temperature it would be called overburned.

A clay which overburns quickly cannot be burned to its minimum porosity thruout the kiln, because the temperature in the top necessary to obtain this degree of porosity in the bottom is enough to overburn the top. It is a dangerous clay to burn, causing much trouble from warping and rolling in the kiln. Also a body which is overburned loses much strength and resistance against abrasion. Clay suitable for paving brick must not overburn easily, and in case the clay is to be tested especially for the production of paving brick, this property is tested more closely by determining the enclosed pore space not made evident by the porosity test. This is done by grinding the clay sample to a fine powder and determining its true density, which is then compared with the density determined from the original sample. It will be noted that the density determined by the last method will be greater than the density determined by the first method. This difference is due to the pores which are completely enclosed and which water cannot enter.

If a clay is to be especially tested for the production of paving brick, it is also well to make a rattler test in addition to the special test to determine the point of overburning. This rattler test may be made on a rattler of laboratory size, using clay discs three inches in diameter of one and one-half inches thick and rattling them with a load, standardized by making a large number of rattler tests with paving brick clays of known qualities.

The burning of clay test pieces readily brings out the refractory property. If practically no changes in the porosity of a clay takes place when burned to a temperature of 2,400 deg. Fahr., or in other words, no vitrification takes place, a melting point determination is worth making, thus determining the exact quality of refractory material a clay may be. A softening point of a clay which will be of value as a refractory should be above cone 28 for a plastic clay of good bonding quality and above cone 31 for non-plastic or flint clays.

Altho the softening point of a clay shows whether or not it is suitable for the manufacture of refractory products, different tests are necessary to test the finished product, which in the case of brick is the load tests, specifications for which have been recommended by the Bureau of Standards and adopted by the government. These specifications require that a brick endure a certain load when heated to a definite high temperature without an appreciable amount of deformation, the test usually being to place the brick under a load of 25 lbs. per sq. in. and raise it to a temperature of 1,350 deg. Cent., or 2,460 deg. Fahr., and hold it at this temperature for one hour. More severe tests may be given in certain cases by increasing the load or the temperature or both.

A RESUME OF POINTS COVERED

To sum up what has been said above, the facts which may be shown by testing clays are:

1. The classes of ware for which a clay is suitable, whether it be for pottery, stoneware, brick, tile, or terra cotta.
2. Whether the clay would be a suitable material to mix with another clay to produce any class of ware.
3. The care which must be taken and difficulties which will possibly occur in making any one kind of material.
4. Whether a clay is being used to make a product it is not suited for.
5. Whether a clay has possibilities other than its present use.
6. Clay tests may show plainly variations in the clay bank and what precautions are necessary during making and burning to get a uniform product from various places in the bank.
7. A clay test presents to the investor in a new enterprise the possibility of knowing what the raw material is fitted to produce.

(In next issue Mr. Williams will describe the different tests which clay, to be used for various purposes, should stand, and in connection with that installment will be published a set of absorption curves which show at a glance the burning properties of different classes of clays. Together these two articles are of great value and should be filed away.)

* * *

Basis For Preferential Shipments

Business men of the country who may at some time apply for preferential shipment under the terms of the recent Act of Congress are warned in a special war bulletin by the committee of the Chamber of Commerce of the United States, which is cooperating with the Council of National Defense, that they must bear in mind that preference can be granted only when essential to the national defense and security of the country. When such applications come to be considered it is not unlikely, the committtee thinks, that attention will be given to the manner and extent to which such business men are contributing to the national defense and security.

WHAT THE LAW SAYS

In connection with the subject of preferential shipments the committee of the National Chamber quotes the following paragraph in the recent amendment to the Interstate Commerce Act, and the power under which the president has delegated Judge Robert S. Lovett:

"During the continuance of the war in which the United States is now engaged the president is authorized, if he finds it necessary for the national defense and security, to direct that such traffic or such shipments of commodities as, in his judgment, may be essential to the national defense and security shall have preference or priority in transportation by any common carrier by railroad, water, or otherwise."

RECENT ACTIONS UNDER THE LAW

It is pointed out in the bulletin that the meaning and effect of this new statutory provision is illustrated by Judge Lovett's order in connection with the shipment of coal to the Northwest. Recently a number of railroads serving Lake Erie ports in the transportation of bituminous coal for transhipment by vessel to ports on Lake Superior and Lake Michigan, were directed by further order, daily to give preference and priority in the distribution of cars to coal mines served by them and transport the same so that bituminous coal for trans-shipment by lake shall have preference and priority in transportation.

USING HOT GASES *from* BURNING KILNS *to* DRY CLAY WARE

THE USE OF HOT GASES taken from kilns during both the firing and cooling periods for drying purposes is experiencing rapid development and more general adoption; and it is not at all unlikely that the future holds a number of more scientific methods of drying clay ware than are already known.

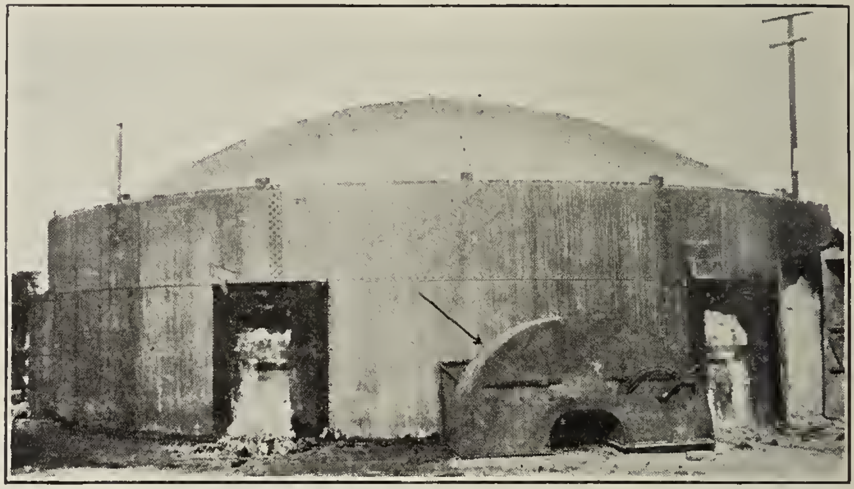
The possibility of using the gases directly from the flues of a continuous kiln has been given considerable attention and the opinion of different superintendents on the success of the various systems employed vary widely.

On the other hand, the use of waste heat from a periodic kiln while in the state of burning, altho still comparatively new, has proved successful on a number of plants and possesses advantages not extensively known.

Not very long ago an item appeared in the "Question and Answer" department of *Brick and Clay Record,* referring to the subject of using heat from the stack of continuous kilns for drying purposes, in which it was stated that the idea was impractical because of difficulties that would in all probability be encountered. Some of these difficulties were the heavy accumulation of soot on the ware, which is distasteful to the tossers, and the action of the acid-containing waste heat gases which would cause deterioration of the dryer cars and waste heat fans. The amount of deterioration which would result would depend upon the amount of active acid content in the drying gases, which, in turn, depends upon the amount of volatile sulphur gases in the fuel and clay being burned.

A comment on this item by William Baines, superintendent of the Hamilton (Ill.) Clay Manufacturing Co., received since the publication of that item, points out that it is entirely practical to take the hot gases from a continuous kiln and pass them thru a dryer instead of allowing them to escape thru the stack. This practice, he says, is followed quite extensively in European countries.

Mr. Baines further states that anyone who has operated continuous kilns knows that by taking heat from the cooling chambers, those sections are cooled so that extra firing becomes necessary to maintain the desired temperature in the firing zone. We believe this not to be true *if the heat is taken far enough back in the cooling sections.* If, however, the gases be taken from the cooling chamber directly in back of the firing zone, the difficulty of decreased heat which Mr. Baines points out will very likely be met with.



This Double Goose-Neck, Used On a Large Indiana Plant, Makes It Possible to Switch the Flow of Waste Heat Gases From the Flue Leading to the Stack to Another Flue Leading to the Dryer, After Water Smoking Has Been Finished.

By taking heat from the heating-up section you meet with the trouble of having incomplete water-smoking, besides the disadvantages already mentioned. On the other hand, by taking the gases from the stack, after they have passed thru the water-smoking chambers, the same difficulties are met with.

SYSTEM SUCCESSFUL WITH PERIODIC KILNS

With periodic kilns, however, it has proved successful on some plants to use the gases from those in the burning stage, after the water-smoking period is over. Such

A View of the Hamilton (Ill.) Clay Manufacturing Co.'s Plant. From the Kilns Pictured Here the Waste Heat Gases Are Taken, During the Burn, to Dry the Ware.

a system has been installed by Mr. Baines at the Hamilton plant, where he has chained up a battery of periodic kilns by making a few alterations in the waste heat flue system of his plant. The waste heat flues leading from the kilns to the main flue were so changed that they led from the main flue of the kiln which communicates with the stack, and connected with the main hot air duct passing to the dryer. These changes are shown in an accompanying sketch.

The method followed in the operation of the new system is to allow the gases during the water-smoking period to pass up the stack by closing the damper of the waste heat flue. Following the water-smoking period, when the waste heat has become free of moisture, this damper is opened and the damper shutting the stack off is closed; thus the gases are drawn thru the waste heat ducts by means of the induction fan at the dryer. At the close of the burn the damper is left just as it was at the finishing stage, allowing a steady flow of heat to the dryer. This heat would otherwise be lost thru radiation.

This procedure brought about several advantages. Formerly, the temperature required for best drying conditions was obtained only during the first twenty-four hours after the gases of the cooling kiln were drawn to the dryer. After that recourse to the auxiliary furnace was necessary until the next kiln was closed down. The burning time, writes Mr. Baines, has also been speeded up and the ware at the bottom of the kiln improved by this system.

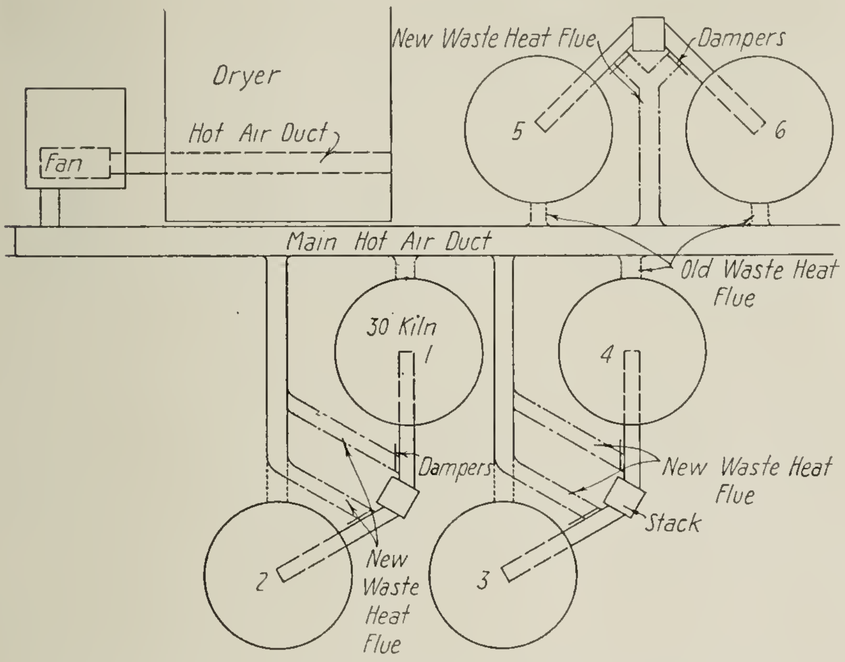


Diagram Showing Arrangement of Waste Heat Flues on the Plant of the Hamilton Clay Manufacturing Co. Which Takes the Heat Directly from the Burning Kilns to Dry the Ware, After the Water Smoking Period Has Been Passed.

Before the alterations were made it was feared that the smoke and gases would corrode the ware and equipment to such an extent that the new system might be a great disadvantage and expense. The fear, however, of any trouble coming from this source was quickly dismissed when the changes were made; the fan blades and dryer cars are inspected frequently and show no excessive corrosion. Trouble due to soot depositing upon the ware is not even experienced. This plan is practical on a plant of six kilns or more.

Another system of obtaining hot gases for supplying the dryer and which is followed successfully on a plant in Indiana is as follows:

A battery of eight round down draft kilns are connected by a large flue leading to a 140-foot stack. Twelve feet below the surface of the ground is a six by six-foot duct conveying the waste heat gases from the various kilns to the dryer. Above this duct is another flue of the same size which leads the gases to the large chimney.

When a kiln under fire is to be connected up to the waste heat system a double goose neck is used to transfer the gases to the waste heat duct, a damper being dropped to disconnect the kiln with the stack flue. This connection is made after a temperature of about 1400 deg. Fahr. is reached, because after this temperature is attained, there is very little smoke in the gases, and hence no soot is deposited upon the ware.

⁂

New Cement-Burned Clay Brick Proposed

In an article recently appearing in "Portland Cement" appears the description of a new method of manufacturing brick from a mixture of burned clay and cement, describing what is, according to that journal, the first use of cement on a material basis in the manufacture of pressed or machine-made building brick. The inventor of this method of manufacture is planning to use the plant of the Builders' Brick & Manufacturing Co. in Kansas City, Mo., which is now engaged in manufacturing burned clay pressed building brick, for manufacturing his product.

Without going into the merits of the new product it is interesting to know the part which burned clay plays in its manufacture; in fact, the first step in the process of manufacture of this brick is the burning of the clay which enters into its production. A sixteen-foot portable rotary kiln, with a capacity for burning approximately one hundred cubic yards of material a day is used. According to the magazine referred to "the portable feature was incorporated to permit locating the kiln close to the pit from which the clay is taken and by so doing to eliminate unnecessary handling of the material. From 1,700 to 2,200 deg Fahr. are required to sufficiently burn the clay, the variance in temperature being governed by the class of clay and shale being handled. The burned material is allowed to remain where discharged from the kiln to cool in the air and is then well sprinkled with water to slack lime particles present.

"The second step of the process is the reduction of the burned material to pass a half-inch mesh screen which produces four sizes: impalpable dust to that passing a 60-mesh screen; that passing a 10-mesh screen; that passing a 4-mesh screen, and that passing a 2-mesh screen.

"The material is then ready to be mixed. The grading of the material is said to be a very important part of the process particularly if strong, lightweight brick are essential. The mixing machine is located directly above the press. The press is said to be a regulation soft-mud clay brick machine with a daily capacity of 20,000 brick.

"The brick are discharged from the press on pallets which are stacked and allowed to remain undisturbed for from twelve to twenty-four hours, when the brick have attained sufficient strength to be hacked into piles to cure. With the exception of an occasional sprinkling to prevent too rapid drying out, the brick need no further attention. After from eight to fourteen days of curing the brick are finished."

What's Your Experience

with using hot gases from the burning kilns for drying your ware. Have you found that the troubles encountered make it impracticable? Or do the benefits derived overweigh the obstacles presented? Send in a description of your system with a layout of your plant, and give the industry the benefit of your experience.

PQ Is the Initial Line, QT the Delivering Line, with a Branch from R to S. The Shipment Moved from P to S, Thru R, and Then Back Thru R to T, Making a Lower Rate Than the Direct Rate from R to T. Also, WXY and WXZ Are Two Competing Roads, with An Interchange at X. We Can Load on Either Road at W. If We Have a Shipment to Make to Z, It Is Cheaper to Ship by the WXY Line and Have the Car Transferred at the Interchange X.

A RATE MENU

From Which Barnes Picks Some Interesting Cases of Unusual Route Combinations Which Have Saved the Company a Considerable Sum in the Shipment of Its Product.

By G. W. Greenwood, M. A. (Oxon)

Secretary, United Fire Brick Company,
Uniontown, Pa.

SEATED AT A SIDE TABLE for two in the Brixton Inn, their orders having been written on the little scratch pad, Barnes prepared to further unload on the General Manager his reflections on the subject of freight rates.

"Here is one which is badly mixed up," he said, as he wrote the following on the scratch pad:*

Est. Wt.	52,936
R. R. Wt.	51,700
Rate	$ 3.62
Freight	93.58
Paid, May 31, 1917	$138.56

"We have filed a claim for the overcharge of $44.98, which was collected from the consignees and by them in turn deducted from our account in settlement."

The dusky attendant placed a pot of tea at his side, and poured a cup.

"How many, sah?" he queried, poising the sugar tongs over the cup.

"Two, please," responded Barnes. Stirring away at his tea, he resumed:

"This is a rather peculiar case from many points of view. Call these four points A, B, C, D. The shipment starts at A, is turned over to another road at B, and is delivered at D. The regular published rate of the initial line from A to B is $2 and from B to D the regular published rate of the delivering line is $1.74. The delivering line charged $1.74 per thousand pounds instead of per net ton. This results in a charge of $44.98 too much; a rather common error."

"Why are not all rates expressed in cents per hundred pounds, instead of some this way and others per net or gross ton?" inquired the G. M. "It would seem to me that this would make the calculations of freight charges uniform and would tend to prevent such mistakes. When one is working on the basis of a hundred pounds, it would seem comparatively easy to forget to divide by two when changing to net tons."

A PREDICTED CHANGE

"This would be a good thing, in my opinion," said Barnes. "There may have been some objection in times past, because such a basis would involve the use of tenths of a cent in expressing car load commodity rates. But since they now employ tenths of a cent in expressing class rates, there can be no objection so far as I can see in basing all rates on a hundred pounds. In fact, I believe they will come to this sooner or later."

---

*The rates, weights and dates mentioned in this article are from actual cases, proper names only being altered.

The waiter took away the soup plates, readjusted the dish of sweet pickles, went thru the usual catalog of waste motions, poured Barnes another cup of tea and shook the pot to see how nearly it was empty.

"Isn't it about time we get our refund?" asked the G. M.[*]

"Yes, sah. Just a minute, sah," answered the waiter as he hurried off and started to scrutinize their list of requirements.

"It ought to be coming soon," said Barnes, smiling as he watched the perplexed waiter. "It takes considerably longer to secure a refund when more than one road is involved."

THE G. M. THINKS HE'S CAUGHT AN ERROR

"By the way," said the G. M., leaning back and smiling at Barnes, "I used to think you were a wonder, but I find you are an ordinary mortal after all." Then in response to Barnes' puzzled look, he explained: "You say the rate from A to B is $2, and the rate from B to C is $1.74, yet you say the thru rate based on this combination of locals is $3.62. What kind of addition is this? It reminds me of the little jingle:

> The next thing I remember,
> I can't exactly fix;
> But I was seated on the floor,
> Repeating, two and three are four,
> But three and two are six!"

Barnes pointed to the letters A, B, C, D. "You have overlooked the C. You know the letter D is like a sailor; it has been following the C for a great many years. Now the $2 rate from A to B, the junction with the delivering line, also applies as far as C ten miles beyond."

"Why do they carry the same rate to a point on another line beyond their own, and necessarily allow the delivering line a share in the freight charges?" asked the G. M.

"A competitor of the initial line crosses the delivering line at C, and they have to carry the same rate as far as C to meet competition. Otherwise the initial road would likely not extend a rate from its own line to cover a point on another line. While the delivering line carries a rate of $1.74 from B to D, its rate from C to D is only $1.62. In asking for a rate from A to D, we pointed out this combination which was the lowest we could find."

"I apologize Mr. Barnes. If you were now to tell me you could lower a freight rate by shipping in the wrong direction, I would be afraid to dispute it."

SHIPPING EAST TO TEXAS TO SAVE MONEY

"I should hope you wouldn't," declared Barnes, gesticulating with his tea spoon. "Because I know where material for Texas is first shipped about fifty miles east, and then reshipped back thru the point of origin, resulting in a combination of rates lower than the direct rate from origin to destination. A case of the longest way round is the cheapest way home, to paraphrase an old adage."

"I thought the Interstate Commerce Commission had ruled against breaking a journey and reshipping in order to take advantage of a combination lower than the published thru rate," observed the G. M.

"I believe that only applies when the shipment moves over the same identical route in both cases. It doesn't seem to apply when the shipment moves out of the direct route. Rates are not like the Irishman's gun, which was warranted to shoot around a corner. I know of a case where a shipment of material, not brick, moved from one line to another, then several miles out of route, and then back and to its original destination, resulting in a considerable reduction in freight charges. Please let me have a pencil, will you?"

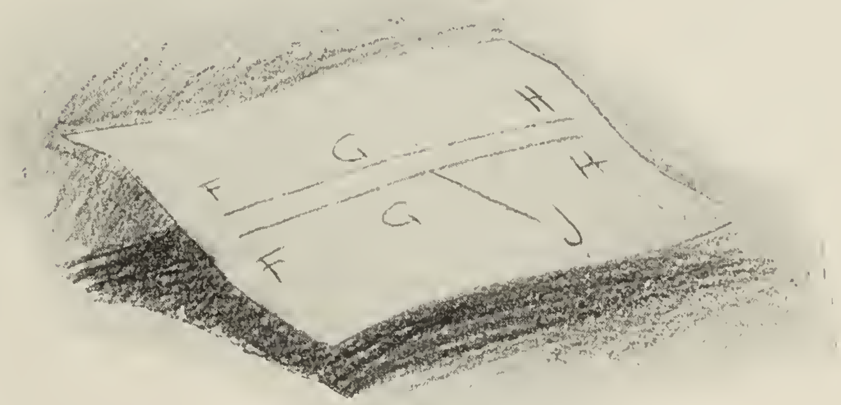
The waiter quickly anticipated the G. M. by handing him one, and then proceeded to arrange the dishes, secretly hoping that the G. M. would not notice the absence of anything which might be called a refund.

Barnes made a little sketch and continued:

"PQ is the initial line, QT the delivering line, with a branch from R to S. The shipment moved from P to S thru R, and then back thru R to T, making a lower rate than the direct rate from R to T."

"That is like bulbs once offered me in the St. Louis market," commented the G. M. "They offered two for fifteen cents, or $1 a dozen. The less one paid, the more he got for his money."

"That often applies to freights. Here is another sample. WXY and WXZ are two competing roads, with an interchange at X. We can load on either road at W. Suppose we have a shipment to make to Z, which is local to one of the lines. It would seem reasonable to ship by the line WXZ. However, we ship by the other line, and have the car transferred at the interchange X. The WZ road seems unable to see why we turn the car over to them at X instead of having it make the entire journey by the direct route. If they were to have a rate check they might find out the reason for our absentmindedness."



A Shipment Is to Be Made from F to G. Both of the Roads, FGH, Have No Rate to G, But Have a Common Rate to H. Previous to a Recent Revision, However, One Had a Lower Rate from F to J, and a Shipment from F to G, an Intermediate Point, Therefore, Received the Benefit of This Low Rate on That Line.

"Why not call the discrepancy to their attention?" asked the G. M. "They might lower the rate from W to Z to meet the combination by the other route."

"More than likely they would insist on raising of the rate from W to Z by the combined route. You never can tell which form an adjustment will take."

A TRAP FOR THE G. M.

"Here is another," he continued, penciling a few lines on the pad. F, G, H are two competing lines. A shipment is to be made from F to G, and it can go forward on either of the two lines. Neither has a published rate from F to G, but both have the same rate to a common point H beyond G. Now which road should we ship on?"

"Does either road have a rate to a point between G and H?"

"No And the intermediate rate clause applies," added Barnes, watching the G. M. over the rim of his tea cup, with a smile in anticipation at the trap in which he would likely fall.

"Then, so far as the rate is concerned, since neither carries a rate to G or to any other point between G and H, and both carry the same rate from F to H, I can't see why there should be any difference. In either case, it seems to me the rate to H would apply to the intermediate point G, and it would be six of one against half a dozen of the other."

---

[*] The refund of $44.98 was actually received September 13, 1917, subsequent to the writing of this article.

"It's six of one against a baker's half dozen of the other," said Barnes, highly pleased at the judgment rendered. "You see, there was on one road a branch between G and H, and to a point J on this branch they carried a rate lower than from F to H. So we shipped from F to G by this road, and then called their attention to the fact that F is just as much intermediate to J as it is to H, since a shipment either to H or J from F would have to pass thru G."

"Say, look here," remonstrated the G. M. "You told me they did not carry a rate to any point between G and H."

"That is true. J is not between G and H. It is off on a branch. Unfortunately, they had a rate check and raised the rate to J to the same as the rate to H, so that now it would not matter over which road we shipped."

The waiter replaced the empty tea pot with a full one, and strengthened for the fray, Barnes returned to the attack.

"In the case of the first rate we were discussing, the A, B, C, D case, I was not a little interested in the fact that one of our competitors had shipments to make to the same destination, and they took their rate to the junction B and added the rate beyond, making a higher combination than if they had based it on rates to and from C, as we did."

"How did you ferret out such a combination when the other fellows overlooked it?"

"One day I was taking a rather long railroad journey, so I took a copy of the tariff of the initial line containing all its rates to points on the delivering line. I went over every point to see if there was a point which would make a lower combination. This was the result. Some tip, that. When making a combination, don't stop at the junction of the two lines. Look and see if by any chance the rate to the junction applies farther along the line."

"Yes, Sah. Sure It Is, Sah. I Was Just Trying to Figure Out Which Hat of the Two Was the Other Gemmens."

GOING BACK TO THE FIRST CASE

"One more query, while we tackle the desert," broke in the G. M. "The rate is based on the rates to and from C, but the delivering line gets its rate from the junction. Did it just happen that the share of the delivering line out of the $2 rate from A to C was twelve cents, which added to their rate from C to D of $1.62 makes their $1.74?"

"You have hit on a slick trick of the initial line. I don't know how the rate from A to C is divided between the two roads, but suppose the initial road gets $1.50 and the delivering road 50 cents. This would give the delivery line $2.12 and the initial road $1.50. Instead, they simply allowed the delivering line $1.74, which was all their tariff called for, and kept the balance. That is a tip for all railroads where a rate is formed by a combination of local rates based on a point other than the junction."

"Why doesn't the delivering line kick? Why don't they demand their share of the rate from A to C, and their rate beyond in addition?"

STOPPING PAYMENT OF HIGH RATE

"No intermediate or delivering line can kick when they receive their full published rate out of any thru rate a connecting line cares to publish," explained Barnes. "Here is another rate question," he continuel, placing before the G. M. the following:

> We have just received bills of lading covering three shipments to the Penton Steel Co., Penton, Va., showing a rate of 17.3c per hundred which would make $3.46 per net ton, whereas the correct rate is $2.66 per net ton as per S&S ICC 12,781, page 141, Penton taking Richmond basis.
>
> Should freight bills be presented for a higher rate than $2.66 we would suggest your refusing to pay them until they are corrected, otherwise there would be the necessity of making a claim and several months delay in securing a refund.

"Why not call the attention of the agent at the point of origin to the error and let him make a correction?" asked the G. M.

"We did advise him, giving tariff authority, and have sent him a copy also of our letter to the consignees, but in case the correction should not overtake the original billing, in notifying the consignee we ensure payment being held up until correct bills are presented. As the Irish philosopher expressed it, the way to prevent what is past, is to stop it before it happens."

As they arose, Barnes gathered up his papers and the attendant held out their hats.

"That is mine," said the G. M.

"Yes, sah. Sure it is, sah. I was just trying to figure out which hat of the two was the other gemmens."

* * *

Columbus and Ohio Building Outlook

Conditions during the past month have changed slightly in Columbus and central Ohio territory towards a more active demand for building materials. This, together with more new structures projected, gives a clearly optimistic tone to the situation. Contractors, builders, brick manufacturers, and jobbers and in fact all material men see a change for the better and are looking forward to a better demand during the winter and early spring. At least, preparations have been made for a better building demand and stocks are gradually being increased.

The campaign which has been waged to show the public that there is little possibility of materials being decreased for some time in the future is bearing fruit. Thus it is seen that prospective builders, who have been hanging back because of high price of materials will again start figuring with the result that quite a few of the projects will be pushed. Some of the larger projects in Columbus, which were postponed, are now being revived and architects are refiguring the work

Building permits for the month of September showed a falling off from September, 1916, it is true and that is to be expected under the circumstances; but a better feeling is reported by Building Inspector German, of Columbus. During September the department issued 181 permits having a valuation of $220,840 as compared with 274 permits and a valuation of $548,056 in September, 1916. For the first nine months of the year the department issued 1,701 permits having a valuation of $3,208,030 as compared with 2,408 permits and a valuation of $5,821,305 for the corresponding period in 1916.

The building show to be held January 21 to 30 in Columbus under the auspices of the Columbus Real Estate & Building Show Co., is expected to have a marked effect in stimulating building operations in all parts of Ohio. Much vim and vigor is being put behind the show and progress is already discernable. The active management of the show will be under L. O. and V. A. Vinson, who managed the Cleveland show so successfully. The show company is capitalized for $3,000.

King G. Thompson, one of the foremost real estate men in the Buckeye capital is optimistic to the extreme. He is known nationally among real estate dealers and builders and was recently called to Toledo to give his views to the real estate and building interests of that city. He said that real estate men and builders would not take a rest at this time until after the war, but they will go on and continue to improve and make money. They should adapt themselves to war conditions, make a readjustment in their business, work a little harder than ever before and make more money in order to be prepared to stand their burden of the war expense.

Mr. Thompson is a diversified builder. He builds homes not only for the wealthy but also for the poorer classes He unfolded a cheerful vision of life and said that progress would be much more marked after the close of the war. He is now engaged in building twenty-eight houses in one section of Columbus alone and other sections are not being neglected. His company is building houses in spite of the high prices and is making money, since the houses can be readily sold at a good profit.

Architects report a larger number of inquiries indicating a desire on the part of owners to go ahead with dwelling and apartment building. In fact there is still such a good demand for homes in Columbus that building has not ceased by any means. With the gradual increase in the manufacturing interests and the influx of people to the Buckeye capital homes are much more in demand than formerly.

* * *

Second Largest Brick Chimney Completed

The second largest brick stack in the world was completed at East Helena, Mont., on September 19 and formally christened with a bottle of champagne. The stack, which is four hundred feet high, was built in forty-six days. It rests on a concrete foundation fifty-five feet square and is twenty-five feet in diameter at the base and sixteen feet at the top. The stack wall is four feet thick at the base and one foot at the top. In building the stack 1,350,000 pounds of cement, 1,000 tons of fire clay, and about 2,000 tons of brick were used. About 7,500,000 pounds of concrete were poured for the foundation.

After the stack was christened H. F. McCarter, master mechanic, nailed a flag to the pole above the scaffolding surmounting the top. Luncheon was then served to a number of guests on the top of the enormous chimney, an open hoist being constructed for the purpose of elevating them the 400 feet separating the top row of brick from the concrete foundation.

Extra! Bill Schlake's Home Ransacked

"Cherchez la femme" is the sleuthing motto of the Chicago police in their search for burglars who ransacked the home of William Schlacke, Jr., sales manager of the Illinois Brick Company, and carried away $600 worth of jewelry, money, and clothing yesterday. They are looking for a woman about thirty years old and stylishly gowned, who stood in front of the home, 4410 North Seeley avenue, for an hour before the robbery. The police believe the woman was aided by a man.

I HOPE DE DAME DONT FALL FER BILL AN' SQUEAL ON US
HE'S A CLEVER FELLOW! WE'LL BE LUCKY IF WE EVER SEE HER AGAIN.
A LITTLE THEATRE AND THEN A FEW BITES TO EAT OVER AT KING-JOY-LO'S- EH, GIRLIE?
OH, MISTER SCHLAKE! YOU'RE A CUT UP.
WILLIAMS

* * *

From Brick Plant to Flying Field

The Wright Brothers Aeronautical Co. have taken over the title of the land formerly belonging to the Croton Point (N. Y.) Brick Co. The brick company is winding up its affairs now and within a remarkably short time workmen will be demolishing the buildings and making over the grounds to suit the purpose for which it was bought—an aviation camp where Uncle Sam's air warriors will be taught the art of flying.

* * *

N. P. B. M. A. Officials Make Inspection Trip

Will P. Blair, secretary, and Maurice B. Greenough, chief engineer, of the National Paving Brick Manufacturers Association, Cleveland, have recently completed a 2,000 mile trip via Ford, over the roads of Ohio, Indiana, West Virginia, Illinois and southern Michigan. The most significant feature of the trip, in their opinion, was the generally poor condition of water bound stone roads, indicating an entire lack of economy as well as absence of service for the main arteries of travel. The same conditions apply to bituminous bound stone roads. On this trip they looked over the concrete roads of Wayne County, Mich., particularly on Michigan and Woodward avenues, in Detroit. On both of these thorofares as well as other concrete roads marked signs of wear and tear were noted. On the other hand the gravel roads of southern Michigan and Indiana were in excellent condition for travel and on the whole superior to the water and bituminous bound stone roads.

* * *

Reduced Freight Rates on Brick

The New York Central Railroad has reduced the freight rates on brick from Syracuse to Buffalo and Black Rock, N. Y., from $2 a ton to $1.05 a ton, according to an announcement made September 24.

* * *

Interstate Commerce Commission Enters New Damage Field?

Whether the Interstate Commerce Commission, after fighting shy of questions relating to general damages in the transportation of freight for twenty-five years, proposes to take a new view of its jurisdictional powers is the interesting question raised by its recent decision awarding reparation in the case of the Atlantic Lumber Co. vs. Toledo & Ohio Central Railway Co. et al, 46 I. C. C. 368.

The material facts in the case mentioned may be summarized as follows: The complainant tendered certain lumber to the Kanawha & West Virginia Railroad for shipment to Buffalo, N. Y., for which a bill of lading was issued carrying the instructions that the shipment, originating at Quick, W. Va., was to be stopped at Charleston, W. Va., "to be worked" at the plant of the Morgan Lumber & Manufacturing Co. This the carrier failed to do. When, upon arrival at Buffalo, it was discovered that the lumber had not been dressed, the complainant had the car switched to a mill there, unloaded, milled and drayed to the consignee at a total cost of $56.89. It was alleged that, had the car been stopped at Charleston, the cost would have been $27.02.

The commission held that the railroad had "failed to stop the car at Charleston for milling, as directed in the bill of lading and authorized by its tariff, and that as a consequence complainant was damaged to the extent of the difference between the expense incurred and borne by it at Buffalo and the expense which would have accrued had the shipment been stopped and milled as directed. Reparation for the difference in cost, viz., $29.87, was awarded.

To this award, Chairman Hall, adhering to the previous decisions of the commission, dissented in the following language: "As I read it, no provision of the Act to Regulate Commerce was violated by the Kanawha & Michigan in the negligent handling of this shipment. Our power to award reparation is restricted to cases of such violation. Doubtless complainant suffered injury and should recover damages, but to my mind its remedy is in the courts."

Until the instant decision, the commission has held strictly to damages clearly predicated upon the Act to Regulate Commerce. For the most part, reparation has been awarded only in the case of an unreasonable rate or a discriminatory practice and where discrimination has been involved the tendency in recent years has been to carefully scrutinize claims for a money award and in many cases reparation has been refused even where the discrimination was itself established.

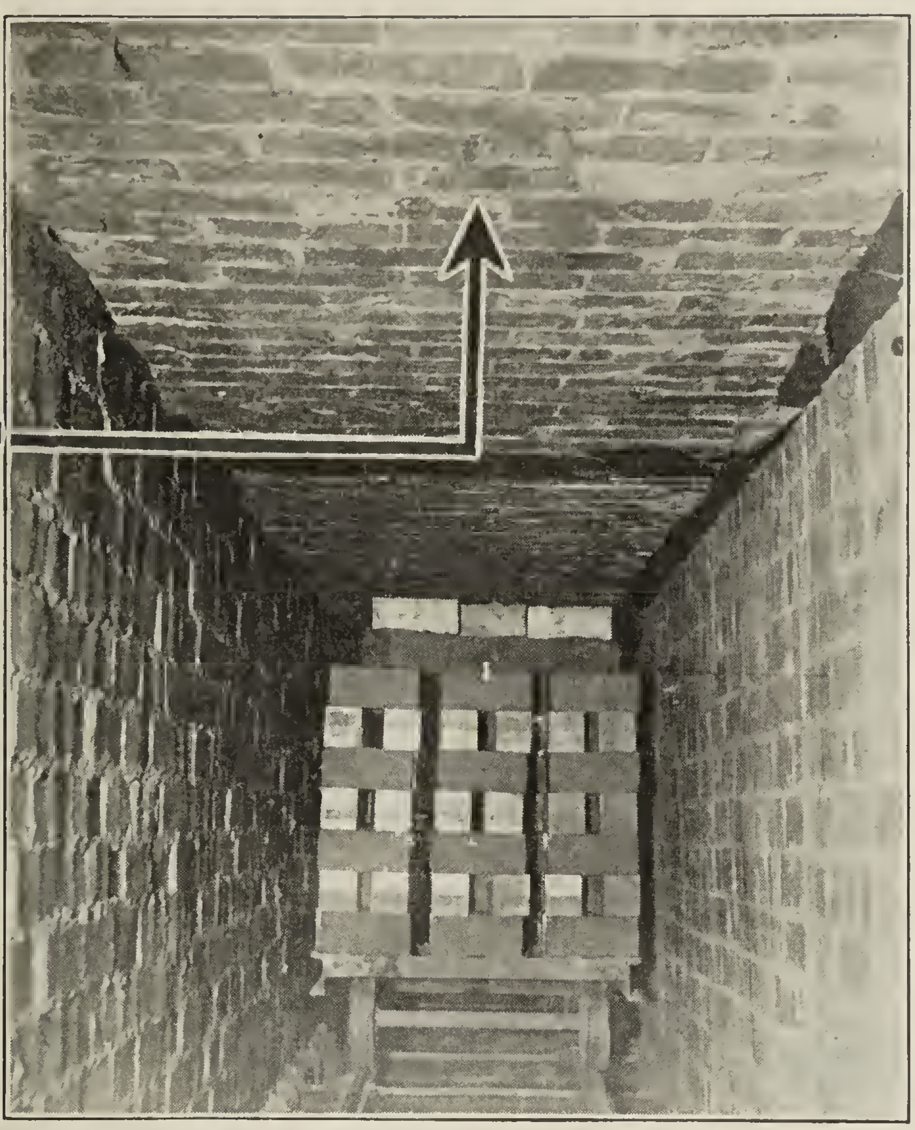
As early as 1895, the commission declared that it had no authority to grant relief for injury to goods shipped from delay in transit, detention, loss, breakage, rotting or other damage not attributable to a violation of some provision of the act. Duncan v. A. T. & S. F., 6 I. C. C. 85. This limitation of jurisdiction was accepted by the shipping public without serious challenge until after the broadening of the commission's powers under the Hepburn amendments of 1906. Since that time, there have been several cases, decreasing in frequency during latter years, in which the shippers sought to have the commission extend its jurisdiction over the general relationship between shippers and carriers.

One of the leading cases upon this point is that of Joynes v. Pennsylvania R. R., 17 I. C. C. 361, decided in 1909. The complainant, a produce dealer at Pittsburgh, Pa., charged unjust discrimination against him, alleging that the railroad had persistently delayed his shipments and had placed them at points inaccessible to his teams for unloading, while cars of competitors were promptly placed at unloading platforms. Claim was made for an award of damages to cover demurrage, storage, employment of additional help, and loss of trade, but the commission, despite a vigorous dissenting opinion by Commissioner Franklin K. Lane, held that it was without jurisdiction to make the award. "In cases of this nature," read the syllabus, "the commission may ascertain whether the discrimination alleged actually occurred or whether the carrier has failed in a duty imposed upon it under any provision of the act as charged in the complaint, but the assessment of any resulting damages, other than damages that may be measured by a difference in rates, must be left to be determined by action brought in a court of competent jurisdiction."

Shortly before the Joynes decision, in an express case, the commission had held that breaches of duty such as loss, damage, failure to make delivery with reasonable dispatch, and loss or damage from wrong terminal delivery were questions solely within the jurisdiction of the courts. Subsequent to the Joynes case, it reaffirmed the underlying principle in that opinion in a number of other cases. For instance, it declined to entertain jurisdiction in a case where complaint was made that failure to place an "order-notify" car on the carrier's hold track had contributed to a rejection. It refused to take jurisdiction where a reduction in billed weight was sought on the ground that shipments of lumber had been negligently handled by the carrier in transfer from barge to cars and had as a result absorbed an undue amount of water. It held that it had jurisdiction over the question of damages for failure to comply with a reconsignment order, but could not make an award for a decline in market price and loss in commissions arising out of such failure and subsequently decided that it had no jurisdiction over damages due to a delay in reconsignment. Consideration of loss and damage claims has been persistently barred.

Without doubt the average shipper would like to see a further extension of the ground taken in the Atlantic Lumber Co. case. With its knowledge of railroad transportation and the obligations incident to common carrier service, it is felt that it could handle many contested cases better than the courts. Generally speaking, its forms are less technical, while its decisions would make for uniformity by establishing a line of national precedents, as opposed to a multiplicity of conflicting state rulings Because of this, it will be interesting to watch whether the decision in the Atlantic Lumber Case marks a definite departure from the commission's former viewpoint of its powers or whether there will be a reversal to the narrower construction adhered to in the earlier cases.

MONOLITHIC BRICK SLAB *for* DRYER ROOF



Interior of Dryer Tunnel, Showing Monolithic Brick Slab Roof

A New Type of Roof, Amply Strong and Economically Constructed, Which Has Been Perfected and Employed by the Danville (Ill.) Brick Company. Many Advantages Have Resulted from Its Adoption.

By Harlan H. Edwards

INCREASED HEAT EFFICIENCY, greater freedom from leakage, and decreased cost of construction are the outstanding features of a monolithic brick dryer roof constructed and used by the Danville (Ill.) Brick Co. In these days of high prices, the almost prohibitive cost of steel and cement has made the construction of dryer roofs expensive propositions, so instead of using the usual steel-beam-and-concrete type, this monolithic brick slab has been substituted with great success.

The first roof of this type was constructed late in the fall of 1915 and it proved such an advantage over the old one that a second one was built six months later. To date both have given perfect satisfaction, and are now in excellent condition.

The idea was originated by the Danville Brick Co., of which Harvey C. Adams is president. Mr. Adams, thru his enthusiastic and whole-hearted support of the monolithic idea for brick pavements, thoroly imbued his co-workers with this spirit and it was his faith in this type of construction that led Frank W. Wood, the general manager of the plant, to make the experiment which has since proven so successful.

TESTS SHOW AMPLE STRENGTH.

Both the design and construction of this monolithic brick dryer roof are very simple. The roof consists of 4-inch No. 2 wire-cut-lug pavers, laid and grouted into a slab 12 feet wide covering three tunnels approximately 100 feet long. There are no expansion joints in this length. Since the roof supports nothing but its own weight (approximately 50 lbs. per sq. ft.), the 4-inch monolithic beam is ample.

In a series of 28-day tests at the University of Illinois in 1917 on the beam strength of concrete and brick slabs, the brick slabs were found to carry about 30 per cent. greater load than the corresponding slabs of 1:3:5 concrete, and nearly 19 per cent. more than similar slabs of 1:2:3 concrete, both made of clean, well-graded sand and gravel. The average modulus of rupture of the brick slabs was 570 and of the 1:3:5 concrete 437, while that of the 1:2:3 concrete was 480. From the value of 570 for the brick, the maximum bending moment at rupture was about 18,000 in. lb. for a slab 1 foot wide. The bending moment of the 4-inch beam with a uniform load of 50 lb. per sq. ft. amounts to but 1,200 in. lb. for a slab of 4-foot span, thus giving a factor of safety of 15 at the end of 28 days. If this slab be considered as a continuous beam over 4 supports as it actually is, this factor will be raised still higher. It is evident, therefore, that a slab of this character gives ample strength.

ROOF CONSTRUCTION IS SIMPLE.

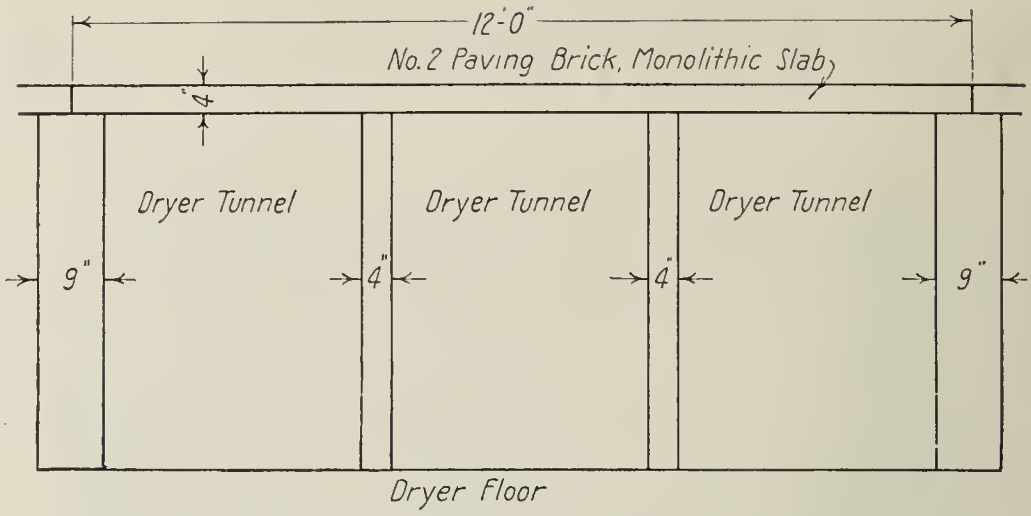
The roof was constructed easily and cheaply, using scrap lumber for forms, making a floor upon which to lay the brick. A layer of roofing paper spread over this form served to provide, first, a more smooth surface upon which to lay the brick and, second, a tight floor to retain the grout. Upon this surface the brick were placed, grouted with a mixture of 1:2 cement and fine creek sand; and, since it was done in freezing weather, it was covered with a layer of manure to retain the heat and moisture. It was then allowed to cure about ten days, during which time just enough heat was supplied to the dryer to prevent freezing.

MANY FAVORABLE FEATURES.

The cost of such a roof is much lower than that of any other type now in use. Assuming a value of 48 cents per sq. yd. for No. 2 pavers, $2 per barrel for cement, and $2.50 per cu. yd. for sand, the cost of the materials amounts to about 58 cents per sq. yd. The labor on this construction was done at odd times by employes of the plant.

The advantages of this type of roof over other kinds of construction are many. Since its beam strength is greater than plain concrete of a 1:2:3 mix, it can be used to advantage where a thicker concrete roof would be required. Since the conductivity of the brick is at least 25 per cent. lower than that of the concrete roof, the heat efficiency of the dryer will be materially increased thereby. Concrete expands and contracts to an appreciably greater extent than does the brick, and further, the change in volume of the concrete due to variation in moisture content may be even greater than that due to temperature changes. This decreased expansion and contraction carries with it a decrease in the number and size of cracks forming, and consequently in the trouble due to leakage upon the drying ware.

There has been no visible deteriorating effect of the waste gases upon the cement grout, while the permanence of the paving brick in such service cannot be questioned. All these favorable features of this departure from the old standard practice fully justify the faith of the Danville Brick Co. in the monolithic brick slab.



Easily and Cheaply Constructed, the Monolithic Brick Slab Roof Shown in the Above Cross-Section Increases the Heat Efficiency of the Dryer Above that Obtained When a Concrete Roof is Employed and is Unaffected by Variations in the Moisture Content and Gases of the Air Passing Thru the Dryer.

* * *

PUSH BUILDING *to* FEED NATION

SPURRED to prompt action by the report that lack of warehouse space in New York is in danger of constituting a menace to the successful distribution of food and supplies to the world, Borough President Marks' committee on the Alleviation of the Stagnation of Building Construction set a busy program for itself this week, says The Dow Service Daily Building Reports of New York.

It was said at the general conference and organization meeting, last Tuesday, that there was hardly a square foot of fireproof warehouse space available at this time in New York and that it was getting increasingly difficult to obtain storage accommodation in semi-fireproof buildings. Elliott Smith, president of the Building Material Exchange, who was elected president of the general committee, with G. Osgood Andrews, vice-president, and George A. Molitor, secretary, urged that the situation required prompt treatment if such was the case and named five committees with instructions to meet at once to proceed with the investigation of conditions such as this. The committee to determine the actual need for building construction meet to morrow, October 10, at 2 o'clock in the Building Material Exchange, Woolworth Building.

At 3:30 on the same afternoon and at the same place the committee to determine the condition of supply and price of building materials will meet. Some of the members of this committee are Arthur B. Pendleton, secretary of the National Terra Cotta Society; Herbert D. Lounsbury, of Fredenburg & Lounsbury, face brick distributors; Col. John B. Rose, president of the Greater New York Brick Co.; William K. Hammond, brick manufacturer; Henry M. Leasbey, president of the National Fireproofing Co.; William H. Powell, president of the Atlantic Terra Cotta Co., and Allen E. Beals, of the Allen E. Beals Corporation, publishers of the Dow Service Daily Building Reports.

At 3 o'clock Wednesday the committee on supply and cost of labor will meet. The time for the meeting of the committee on building laws has been set for Thursday afternoon. On Friday, after banking hours President Elliott will meet with the committee on mortgage loans at 3:30.

The problems these committee men, nearly all of whom were present at the organization meeting, will have to meet include the rather contradictory condition of the building materials market and the demand for construction. For instance, zinc is lower, but copper, on which a price has been fixed, is still up. Metal lath is going up another cent a yard by the fifteenth of the month because contracts made before the war are expiring and even the government's fixed price is higher than the level of the old contracts. This applies to many metal lines. Steel prices have been fixed and deliveries are hard to get, but at the same time there are more than 7,000 tons of fabricated steel ready for immediate delivery in Long Island available to builders.

Red cedar is up $2 and so is Long Leaf Yellow pine, while brick is around $8 to $8.25 with little demand. Gravel is up fifteen cents a cubic yard, the biggest jump since the war started and is now quoted at $1.40 a yard for inch and a half and $1.50 a yard for three-quarter inch sizes. At the same time window glass discounts have been shortened as a result of the fifteen per cent. increase in list prices of glass manufacturers on the first of the month.

These strangely fluctuating prices reflect a general attempt to make readjustments to meet prospective building demand and manufacturing costs. Assurances were freely made that structural steel at the new price will be deliverable here by January 15 and at the same time glass manufacturers will not resume operations until December instead of this month and brick manufacturers are going into the winter on low levels. On the other hand, Portland cement manufacturers are getting ready for the biggest prosperity in their history encouraged by two years of postponed building work plus a tremendous volume of work that is just now appearing in tentative form on architects' boards. The only thing now required is to know actual conditions of demand and supply. Then investors will act.

TENTATIVE METHODS *for* ULTIMATE CHEMICAL ANALYSIS *of* REFRACTORIES

Proposed in the Report of Committee C-8 at the Recent Meeting of the American Society for Testing Materials, Held at Atlantic City, N. J.

Prefatory Note.—It will be understood that the making of a complete silicate analysis is a difficult procedure requiring a wide knowledge of the chemistry involved in the operations, and a thoro training in carrying out the work. A skilled analyst of good training is therefore required to do the work. The descriptions here given cover the vital points of procedure, but frequent reference in regard to the details of the varicus manipulations must be made to Bulletin No. 422, United States Geological Survey on "Analysis of Silicate and Carbonate Rocks," by W. F. Hillebrand; also, to "Treatise on the Ceramic Industries," Vol. 1 (1913), by J. W. Mellor; and to similar publications.*

THE SAMPLE shall be crushed in a hardened tool-steel mortar, using a pestle of the same sort. Fine grinding shall be done in an agate mortar, either by hand, or by a mechanical sample grinder of the McKenna, Carling or similar type, so constructed as to prevent the introduction of impurity.

2. Moisture shall be determined in the sample in its ordinary air-dried condition, and all other percentage compositions shall be calculated to a moisture-free basis. Whenever a sample is weighed out for any determination, a moisture determination shall also be made.

3. In all cases, check determinations shall be made, and the results shall be redetermined if satisfactory checks are not obtained. It shall be considered satisfactory if the differences between check determinations do not exceed the following limits:

For silica or other constituent amounting to 30 per cent, or over	0.3 per cent.
For alumina or other constituent amounting to 10—30 per cent	0.2 per cent.
For any other constituent amounting to under 10 per cent	0.1 per cent.

These figures are stated in terms of the whole sample as 100 per cent.

2. SOLUTIONS REQUIRED

4. The acids referred to as concentrated shall be of approximately the following specific gravities:

Hydrochloric acid	1.20
Sulfuric acid	1.84
Nitric acid	1.42

5. Dissolve 1.5 g. of ammonium carbonate in 50 cc. of cold water.

6. Dissolve 107 g. of ammonium chloride in 1,000 cc. of warm water.

7. Neutralize 20 cc. of concentrated nitric acid with ammonium hydroxide and dilute to 1,000 cc. Test with litmus; the solution shall not be acid.

8. Dissolve 1 g. of ammonium oxalate in 50 cc. of water, heating gently.

9. The strength of the final standard titania solution shall be 1 cc.=0.0001 g. TiO_2. To prepare the solution weigh out in a platinum crucible an amount of potassium titanium fluoride (K_2TiF_6) sufficient to make from ½ to 1 liter of "stock solution" in which 1 cc.=0.001 g. TiO_2. Evaporate several times with sulfuric acid without taking to dryness, thus driving out all fluorine. Take up the residue with water containing enough sulfuric acid to make at least five per cent. of the solution, when finally diluted to the standard solution strength. To standardize the stock solution take out two 50-cc. portions, dilute, boil and precipitate with ammonia. Filter, wash with hot water until free from alkali, ignite, blast and weigh. The duplicate should check very closely. From the weight of titania thus determined calculate the strength of the stock solution. The standard solution to be used is obtained from the stock solution by diluting until 1 cc.=0.0001 g. titania (TiO_2).

10. Dissolve about 0.4 g. (a little less) of potassium permanganate in 1 liter of water and check against an iron solution of known purity and strength. Dilute the solution until 1 cc.=0.001 g. Fe_2O_3.

3. METHODS

11. To determine moisture, heat approximately 1 g. of the sample at a temperature not under 105 nor over 110 degrees C., to constant weight.

12. To determine loss on ignition, heat about 1 g. of the sample over a blast lamp or in an electric furnace at 900 to 1,000 degrees C., to constant weight. Ignition loss may be determined in the sample from which the moisture has been removed. The percentage of ignition loss is calculated to a moisture-free basis.

13. To determine silica, weigh out approximately 0.5 g. of the sample and mix with 5 g. of sodium carbonate. Put a little sodium carbonate in the bottom of the crucible before introducing the mixture, and then cover the mixture with a little more sodium carbonate. Fuse over a Meker burner or blast lamp until complete solution is obtained. Cool the fusion and as it solidifies, rotate the crucible to spread the mass up the side walls. Dissolve the fusion in about 100 cc. of water in a platinum or porcelain evaporating dish. Add about 20 cc. of concentrated hydrochloric acid, introducing it slowly by means of a pipette, keeping the dish covered with a watch glass. Evaporate to dryness and heat until

---

*Criticisms of these Tentative Test Methods are solicited and should be directed, preferably before January 1, 1918, to Mr. A. V. Bleininger, Chairman of Committee C-8 on Refractories, Bureau of Standards, Pittsburgh, Pa.

the fumes of hydrochloric acid are gone. Add about 5 cc. of concentrated hydrochloric acid and 30 to 40 cc. of water. Warm on a water bath for 10 to 15 minutes and break up the lumps. Decant the clear liquid onto a filter paper and collect the filtrate in a 400-cc. beaker. Add more hydrochloric acid and water to the evaporating dish, warm again and decant. Repeat this a third time.

Finally transfer the contents of the dish to the filter paper. Wash with cold water until silver nitrate shows no chlorides to be left. Transfer the filtrate to the original evaporating dish, evaporate again to dryness and wash as before. Transfer to a platinum crucible. Ignite carefully over a Bunsen flame until the filter paper is burned off, then blast for about 30 minutes; cool and weigh. Repeat blasting for five minutes, weigh again and repeat until constant weight is obtained.

To the residue in the crucible, add about 5 cc. of water and 5 drops of sulfuric acid (the latter to prevent the formation of titanium fluoride). Evaporate to dryness. Again moisten with about 5 cc. of water and 5 drops of sulfuric acid. Add hydrofluoric acid drop by drop at first, and then slowly until the crucible is almost one-half filled. Warm on a hot plate until almost dry, add 2 or 3 cc. more of hydrofluoric acid and evaporate to dryness. Heat the crucible to bright redness and then blast for 5 minutes. Cool and weigh and repeat blastings to constant weight. The loss in weight from the original silica residue represents the actual silica content (SiO_2), except for that part of silica which is later recovered from alumina, etc. The residue from the hydrochloric-acid evaporation is left in the crucible and the total precipitate of alumina, etc., is added to this same crucible in which it is ignited and weighed.

DETERMINATION OF BASIC OXIDES

14. To determine alumina, to the filtrate from the silica determination, add about 10 cc. of ammonium chloride and heat to boiling. Then add ammonium hydroxide very slowly and with constant stirring until there is a slight excess. Filter hot and rapidly, and wash four times by decantation with hot solution of ammonium nitrate. Carefully wash the precipitate from the filter paper into a beaker, using hot water. Dissolve the precipitate in hot dilute hydrochloric acid. Repeat the precipitation with ammonium chloride and ammonium hydroxide. Decant four times as before, using hot ammonium nitrate. Transfer to the filter paper and wash with hot ammonium nitrate until the washings are free from chlorides when tested by silver nitrate. Evaporate the filtrate nearly to dryness, add a little ammonium hydroxide and continue the evaporation Keep the solution alkaline to coagulate any iron and aluminum hydroxides. Transfer the precipitate to a filter paper and wash thoroly. Transfer the moist filter paper to the platinum crucible containing the residue from the silica. Burn off the filter paper and blast the precipitate. Cool in a desiccator and then moisten with one drop of nitric acid and heat gently until all fumes are gone. Blast again and weigh. Repeat blasting and weighing to a constant weight.

15. To determine iron oxide, fuse the ignited alumina precipitate with about six times its weight of potassium pyrosulfate or potassium bisulfate. Avoid sputtering. Heat carefully to redness and continue heating until the residue is all dissolved. Cool. Dissolve in warm water, add about 10 cc. of dilute sulfuric acid (1:5). Evaporate to a small volume. Then heat to a higher temperature until copious fumes of sulfuric acid are evolved. Sufficient sulfuric acid should be present to form a pasty mass when cooled. Evaporate to dryness, filter off, wash, ignite and weigh the silica as before and evaporate with hydrofluoric acid as before. The loss in weight is extra silica to be added to the original silica determination and subtracted from the alumina. Fuse the residue with a little potassium pyrosulfate or potassium bisulfate, and add the solution of this cake to the main solution. Transfer the total filtrate to a 250-cc. graduated flask and dilute to 250 cc. mixing thoroly. Draw off 50 cc. of this solution and reserve for titania determination. Pass the remaining 200 cc. thru a Jones reductor, or otherwise reduce the solution with pure zinc and sulfuric acid. To the solution add 3 cc. of 10 per cent. copper-sulfate solution and titrate with standard potassium-permanganate solution (1 cc. equivalent to 0.001 g. Fe_2O_3), until a faint pink tinge is seen. If Jones reductor or similar apparatus is used, subtract the potassium permanganate equivalent, which has previously been determined on blank samples run through the apparatus. From the result, calculate the iron as iron oxide (Fe_2O_3).

16. To determine titania, place in a small Nessler tube the 50 cc. of filtrate previously set aside for titania determination, and fill the tube up to the graduation mark. Add 1 cc. of hydrogen peroxide and shake well. The color of this solution is now compared in any standard color comparator with the color of a known standard solution, preferably of such strength that 1 cc. equals 0.0001 g. of titanium dioxide (TiO_2). To make the comparison, put 10 cc. of this standard solution into a second small Nessler tube and dilute with water from a burette until the color is matched. Note the amount of water added and calculate the percentage of titanium dioxide in the sample.

METHOD OF DETERMINING THE ALKALINE EARTHS

17. To determine lime, evaporate the filtrate from the alumina precipitation to about 250 cc. While still boiling add about 5 cc. of acetic acid. Meanwhile, dissolve about 1 g. of oxalic acid in a little hot water and add to the solution. In about five minutes add a slight excess of ammonium hydroxide and boil until precipitation is complete. Cool thoroly and filter. Wash three times by decantation with dilute ammonium hydroxide (1:10) or a one per cent. solution of ammonium oxalate. Dissolve the precipitate by adding about 50 cc. of dilute nitric acid (1:5). Again add a slight excess of ammonium hydroxide and a few drops of oxalic-acid solution. Boil well and let stand a couple of hours to cool. Filter and wash as before. Transfer the precipitate to a platinum crucible, carefully burn off the paper and ignite over a blast lamp for about 10 minutes. Cool and weigh quickly. Repeat the blasting to constant weight. The increase in weight of crucible is calcium oxide.

18. To determine magnesia, add to the filtrate from lime precipitation about 2 g. of sodium-ammonium-phosphate dissolved in 15 cc. of water. Stir vigorously and while stirring add drop by drop about one-third of the volume of the solution of ammonium hydroxide. Let stand 12 to 24 hours. Filter and wash the precipitate with dilute ammonium hydroxide (1:10). The filtrate is discarded. Wash the precipitate until the washings show no discoloration when tested with silver nitrate. Redissolve the precipitate in warm dilute nitric acid (1:5), using about 50 cc., and collect in a beaker. Precipitate and wash as before. Collect the precipitate on a Gooch asbestos crucible. Dry slowly and then heat over a Meker burner for about 10 minutes; cool and weigh. Reignite to constant weight.

J. LAWRENCE SMITH METHOD USED

19. To determine alkalies, the J. Lawrence Smith method shall be used. Weigh out about 0.5 g. of the sample and mix well with 0.5 g. ammonium chloride and 3 g. calcium carbonate. Transfer to a platinum crucible, placing about 0.5 g. calcium carbonate in the bottom of the crucible and a similar amount over the top of the mixture. Heat gently over a low flame for about 15 minutes to volatilize ammonium

chloride. Then raise the temperature until the lower three-quarters of the crucible is dull red. Hold this temperature for about one hour. Cool, take up with about 50 cc. of water and heat over a water bath, adding water to replace that lost by evaporation. Break up any lumps with a small pestle. Decant the clear liquid through a filter paper and wash four times by decantation. Then transfer the residue to the filter. Wash until silver nitrate shows only a very faint turbidity.

To the filtrate add ammonium hydroxide and ammonium carbonate and heat to boiling. Filter and again digest the precipitate with ammonium hydroxide and ammonium carbonate. Filter and allow the filtrate to collect with the previous filtrate, then evaporate to dryness in a platinum or porcelain dish. Remove ammonium salts by gentle ignition in a moving flame. Treat with water and remove the last trace of lime by adding ammonium oxalate to the boiling solution and let stand over night. Filter, evaporate to dryness, ignite gently and allow to cool. Then moisten the residue with hydrochloric acid, evaporate again to dryness, ignite gently and weigh. The increase in weight is potassium chloride plus sodium chloride. Dissolve in water. Ignite and weigh any insoluble residue, deducting this from the mixed chlorides.

Dilute the solution of the mixed chlorides and add hydrochloroplatinic acid in amount equal to 0.3 cc. more than would be necessary if all chlorides were present as sodium chloride. Evaporate to a syrupy consistency. Cool and treat with a few cubic centimeters of 80 per cent. ethyl alcohol. Stir and decant through a weighed Gooch crucible. Treat again with 80 per cent. alcohol and decant. Repeat washing and decantation until the alcohol leaving the Gooch crucible is colorless and the precipitate appears golden yellow, not orange. Transfer the precipitate to the Gooch crucible, wash with 80 per cent. alcohol about six times and dry at 130 degrees C. to constant weight. This residue is potassium chloroplatinate.

The oxides are calculated as follows:

Weight of potassium chloroplatinate × 0.3068 = potassium chloride.

Weight of potassium chloroplatinate × 0.1941 = potassium oxide (K_2O).

Total chlorides — potassium chloride = sodium chloride.

Sodium chloride × 0.5303 = sodium oxide (Na_2O).

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

Article Eight: Regulations Which Determine the Right of Shipper to Enjoy the Benefit of Carload Rates

By Sydney A. Hale

THERE are three factors common to the integrity of every road-haul freight rate, viz., application as to (1) commodity; (2) quantity, and (3) territory. From the first standpoint, rates are either class, based directly upon the freight classification, which is the keystone of all rate-structures, or special rates. Special rates are either exceptions to the classification or true commodity charges. This article continues the study of quantity as a factor, commenced in the preceding issue.

IT IS the right of the shipper to have the benefit of the carload rate whenever the amount of freight which he offers for shipment at one time equals the minimum weight provided for that commodity.—In re Suspension of Western Classification No. 51, 25 I. C. C., 442.

CARLOAD RATES SUBJECT TO MINIMUM WEIGHTS

Application of the carload rate to a shipment is conditioned upon the loading of a fixed quantity of freight called the carload minimum weight. Generally it is definitely stated in pounds, tho in some cases provision is made for loading to the market or visible capacity of the car. The minimum varies with the commodity loaded and, with many commodities, particularly light and bulky articles, with the size of the car loaded. Regardless of the manner in which the minimum is stated or provisions for sliding minima varying with the size of the equipment used, the minimum weight is as much a part of the carload rates as the rate in dollars and cents per hundred pounds itself and has been so recognized by the Interstate Commerce Commission.

To entitle a shipper to the benefit of the carload rate, tariffs usually provide that the shipment must be made by one shipper from one station in one day upon one bill of lading and must be consigned to one consignee at one destination. This does not, however, prevent the shipment of "pooled" or "consolidated" carlots at the carload rate. A pooled or consolidated carload is one containing shipments from several consignors to one consignee, or from several consignors to several consignees, or from one consignor to several consignees, but loaded and unloaded by an agent of the shipper who acts as consignor or consignee. The weight of the several shipments making up the consolidated carload must, of course, in the aggregate equal the regularly established carload minimum. Several dealers in the same line at one town might purchase a carload of a commodity from a manufacturer and have it billed to one of their number who would act as distributing agent. In some industries, associations have agents who so act, while large cities usually have one or more firms who specialize in this business.

For several years there was a hard fought controversy as to whether such shipments were entitled to carload rates. Some carriers demanded their less than carload rates upon pooled shipments. This question, however, has been settled by decisions of the Commission, sustained by the courts, to the effect that the carrier may not look beyond the physical carload. In other words, if freight weighing the carload minimum is offered for transportation by a forwarding agent or to a forwarding agent, the carrier has no right to inquire into the actual ownership of the property, but must issue a bill of lading showing the shipment as consigned from or to the person designated by the shipper's agent. Carriers have, however, quite generally prohibited their own agents and employes from acting as forwarding agents for shippers.

REASONABLE MINIMUM A QUESTION OF FACT

As in the case of a reasonable rate, the question of what is a reasonable carload minimum is one of fact. If the minimum named is too high, traffic will not move freely under it and the advantages of the carload rate will be largely nullified. On the other hand, if the minimum is so low that a substantial part of the space in the car of average size is not used, it operates directly to the disadvantage of the carriers and indirectly to the detriment of the shipping public as a whole. The average capacity of the American freight car increased thirty per cent. between 1904 and 1914. In the first year the percentage of cars of an average capacity of fifty tons or over to the entire number of cars in service was less than seven; in 1914, it was over thirty per cent.

The principle of increasing the minimum weight with an increase in the size of the car must be recognized as correct and as tending towards efficiency and economy in loading. Because, without such a provision, the incentive is not always present "to utilize car space to the fullest extent practicable," the Commission, in recent cases, has shown a disposition to permit increases in carload minimums even tho disturbance in certain commercial conditions result. "That it is convenient or desirable to have light loads that small shippers may get carload rates is not a transportation reason sufficient to prevent the carriers from utilizing somewhat more fully their equipment."

This does not mean, however, that commercial conditions are to be ignored in arriving at carload minimums. The establishment of a reasonable minimum can not rest solely upon the test of the physical ability to load a certain weight into a car. The commercial minimum which is "that minimum which represents the unit of purchase and sale of the commodity as established by custom and the conditions existing in that trade and in the territory at the time the minimum was established" is a real thing and "established methods and customs governing business at any particular time should be given proper weight.

CARRIERS ENTITLED TO SET JUST MINIMA

Carriers are entitled to establish such minima as will protect them against being required to haul their equipment for less than a fair compensation. So long as the combination of rate and minimum in a particular case does not yield a greater revenue than a just and reasonable sum for the transportation of the car, the minimum is not unlawful. Where carriers are seeking to increase their minimum weights to a point short of what can be reasonably and generally loaded, the Commission is not warranted in denying such increase. While the minimum weight should not exceed the loading capacity of the car, economy of operation is promoted by heavier loading and the whole public benefits by economies that reduce the cost of transportation.

In general, it may be said that a reasonable carload minimum represents the average feasible loading, having due regard for the interests of both shippers and carriers. At one time the flat statement was made that the minimum should never exceed the capacity of the car, but the Commission later said that a carload minimum for light and bulky articles, such as furniture, should be such that the minimum could ordinarily be loaded, but that the minimum was not necessarily unreasonable because it occasionally happened that cars, altho loaded to their full physical capacity would not contain it. "The true rule," remarked Commissioner Prouty, "is that the minimum should not exceed what could ordinarily be loaded with proper care and skill."

On the other hand, where cars are normally incapable of being loaded to a prescribed minimum, such weight is unreasonable. To guard against unjust charges, the Commission has directed that tariffs provide that, in such cases, the marked capacity of the car will govern.

* * *

Federal Reserve Board on Trade Acceptances

The Federal Reserve Board has been making a general inquiry into the use of trade acceptances by business houses thruout the country. The results now available show that the introduction of trade acceptances is proceeding slowly. In a report on this subject just made by the board, in part says:

"Under existing commercial practice most trades have become habituated to the use of the so-called cash discount system. In accordance with that system, buyers very generally draw upon a previously accumulated bank balance or else furnish themselves with the necessary funds by giving their local bankers their own notes, either with or without collateral. Immediate payment made by the use of such funds is rewarded by the allowance of a substantial discount for this 'cash' remittance. The 'cash' has, however, as just noted, been provided in many instances by local borrowing. With few exceptions the business houses of the country show themselves inclined to maintain this system, sometimes adopting in conjunction with it the plan of requiring acceptances from these buyers who are not able, or for some reason do not choose, to take advantage of the cash discounts, liquidating their indebtedness at maturity without discount. Trade acceptances are thus, in many cases, assuming a position as representatives of obligations incurred by concerns which find it easier or preferable to be carried during the necessary credit period by their mercantile creditors rather than by banks. The problem of improving the commercial paper of the country cannot be solved in this way, but requires the adoption of methods which will result in the substitution of discountable two-note paper for the main body of the 'straight notes' which now represent the bulk of the commercial obligations of the nation."

* * *

F. W. Butterworth Tackles Patriotic Task

F. W. Butterworth, head of the Western Brick Co., of Danville, Ill., has been appointed chairman of the inter-alien bureau established by the Illinois Council of Defense. The bureau will promote harmony of purpose and action between men and women of all nations in sympathy with the allied cause.

* * *

Valuable Clay Found in Russia

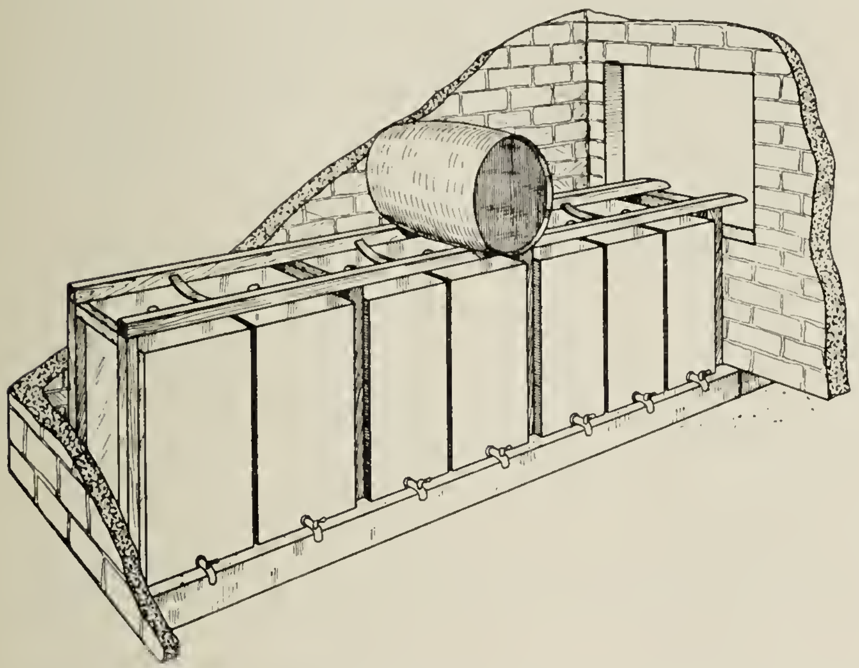
Consul General Maddin Summers, in Moscow, Russia writes that near the town of Karpovka, in the county of Ranenburg, government of Ryazan, Russia, it is reported that large deposits have been found of clay which is suitable for the manufacture of the acid-resisting receptacles required for the chemical industries.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Safety in Oil-Storage House Construction

On a hollow ware plant in Indiana there is an oil-house which is undoubtedly one of the most efficient and up-to-date oil-storage places of its kind. The building is constructed of hollow ware and measures about fifteen feet long, eight feet wide, and eight feet high. The floor, which is built about six inches below the ground level, is made of cement. This lower floor construction possesses the advantage of confining the flow of oil, should an explosion ever occur and cause the oil to run out of the cans which contains it. Thus, no burning oil will ever run all over the plant and cause a general conflagration.



Among the Important Features of This Oil-Storage House Is Its Low Floor, Which Would Confine the Oil Within the Structure, in Case of Leakage or Explosion.

Against one of the long walls of the building are seven galvanized iron cans made by a local tinsmith. These cans measure about eighteen inches wide by forty inches high, by forty-two inches long, and hold a little more than one barrel of oil. On top near the center is a hole thru which the oil is poured from the barrels. In front near the bottom are faucets which may be locked when not used. Below the faucets is a long trough built in the cement floor which measures about twelve inches wide by eighteen inches deep. This trough serves to catch waste material, which, when reclaimed, may be used to oil up the dryer cars or for other such purposes.

Above the cans is a rollway which leads to a window at the end of the building. When a barrel of oil is received at the plant it is very easily transfered from the cart onto the rollway and rolled up to the can to be filled. By knocking out the bung and rolling the barrel over so that the oil runs into the funnel feeding the can all of the oil can be poured into the can and the barrel taken away again.

This type of oil house requires very little lifting to get the barrel in a good position, it is of fireproof construction, and is safe in case an explosion occurs which would cause the oil in ordinary cases to run all over the plant. It is not expensive and not wasteful.

* * *

A Point to Watch in Mixing Clays

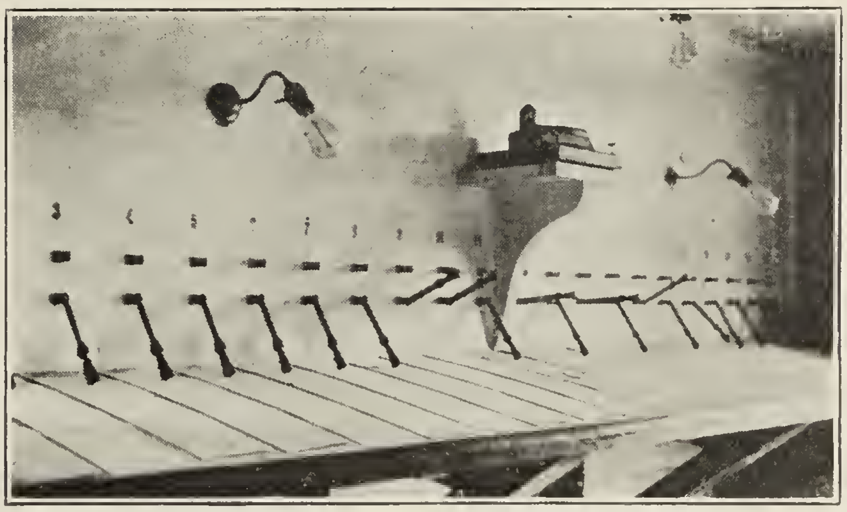
In the mixing of clays for the production of a better body from which to manufacture ware such as sewer pipe, hollow ware, drain tile, etc., it is decidedly poor practice to blend a clay that vitrifies at a low temperature with one that matures at a much higher temperature and try to produce a vitrified ware by burning to a much higher temperature than the low temperature clay will stand when burned alone. Surface pimpling of the sewer pipe, bleb structure, and weak strength are the usual defects caused by such a practice.

Fine grinding and a thoro mixing of the clays will improve a body consisting of two or three different clays by producing a more homogeneous mixture.

* * *

Keeping Tab on the Burning

A novel and effective system of following the progress of a kiln under fire is that used on the plant of the Clay Products Co., at Brazil, Ind. In the head burner's office, located in the center of the kiln grounds, are a series of switches which connect up the pyrometer thermo-couples in the kilns with an indicator located in the room. On a table which runs along the wall containing the switches is a number of record cards, one for each kiln. These are placed immediately below the switch which makes a connection for the kiln whose temperature is being recorded on them. Each card is designed so that four distinct burning records can be made upon it, two on each side.



The Knife of Each Switch Connecting One of the Kilns to the Pyrometer Is Directly Above the Card Upon Which That Particular Kiln's Record Is Being Kept.

On the second story of this building are two recording pyrometers which the head burner watches and which are unseen by the men.

Every hour the burners determine the temperature of the kiln which they are firing and make a record of that temperature on the proper card. At the same time the record-

Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited

CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo, Michigan, U. S. A.

GOODRICH Belts
"Commander" Transmission and "Longlife" Conveyor Belts are unbeatable for the Brick and Clay industry.
THE B.F. GOODRICH COMPANY
Factories: AKRON, OHIO Representation Everywhere

UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket
Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used Sprockets, Buckets, Elevators, etc.—Send for Catalog
"The Chain of Double Life"
THE UNION CHAIN & MFG. CO., SEVILLE, OHIO

DO YOU NEED MONEY?
We Specialize in Bonds on Clay Properties.
We Arrange for Their Issuance and Sale.
We have rendered aid to many clay product manufacturers desiring to expand and improve their properties.
Write Us—Perhaps We Can Help You
F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILL.

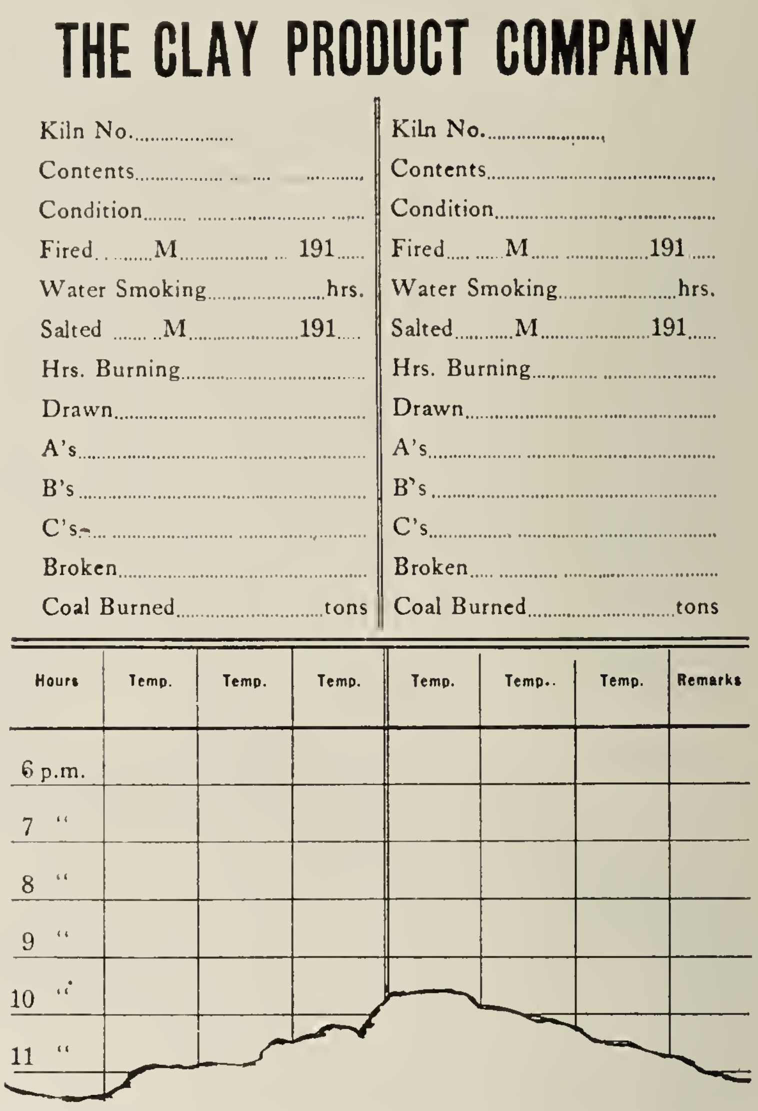
SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation
TRACK CABLE
LOAD CABLE
DUMP TROLLEY
BUCKET DIGGING
BUCKET DUMPING
ANCHOR
DOUBLE DRUM ENGINE A BOILER MOUNTED ON MOVABLE TOWER
SPOIL PILE
SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.

"SCANDINAVIA"
(Solid Woven Cotton Belt)
TRULY THE BRICKMAN'S BEST BELT
Scandinavia Belting Co.
106-108 Reade Street, New York
Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.
Canada: Federal Engineering Co., Limited, Toronto and Montreal.

TO STOP advertising to save money is like stopping a clock to save time.
—*The Little News.*

ing indicator on the floor above is making an indisputable record of the same burn.

It can readily be seen, therefore, how the burner will strive for perfection in his reports as well as to produce the best results possible in firing his kiln.



THE CLAY PRODUCT COMPANY

Kiln No.	Kiln No.
Contents	Contents
Condition	Condition
Fired ... M ... 191	Fired ... M ... 191
Water Smoking ... hrs.	Water Smoking ... hrs.
Salted ... M ... 191	Salted ... M ... 191
Hrs. Burning	Hrs. Burning
Drawn	Drawn
A's	A's
B's	B's
C's	C's
Broken	Broken
Coal Burned ... tons	Coal Burned ... tons

Hours	Temp.	Temp.	Temp.	Temp.	Temp.	Temp.	Remarks
6 p.m.							
7 "							
8 "							
9 "							
10 "							
11 "							

By Requiring the Burner to Register the Progress of His Kiln, He Is Kept More Interested in His Work and Will Strive for Better Results.

⁂

Choosing a Dryer Fan

The selection of a fan to be used on the waste heat dryer is often a perplexing question to the superintendent. The following matter on this subject is abstracted from Dwight T. Farnham's article in Volume XII of the Transactions of the American Ceramic Society, on "Brick Drying From an Engineering Standpoint."

The disc fan is satisfactory in many ways. It requires five to twenty horse power to operate, but the uniform conditions obtainable more than justify the installation of this type of fan.

The secondary blower has many advocates on account of its greater positiveness than the disc fan. The first cost and the cost of installation is somewhat greater than in the case of a disc fan. The blower companies are advocating the use of a large enough primary blower to make the use of a secondary fan unnecessary. Theortically this is all right but it requires air tight doors on each end of the tunnels of the dryer, a condition rather hard to maintain around a clay plant.

As far as the writer knows, a blower or paddle wheel fan is the only type of fan used at the kiln end of a dryer. The standard wheel which is the type most commonly used has the blades, which are straight or slightly curved, perpendicular to the axis of the shaft. The larger sizes—

fourteen feet and over, are usually what is known as the Guibel type, and have the blades pitched backward at an angle of about forty-five degrees. This allows a more rigid construction and is considered more satisfactory. The Sirroco type, which has been introduced in recent years, is more economical than either of the other types, the saving on the equivalent of a fourteen-foot blower being about eighteen horse-power. The disadvantages of this type of fan consist in the long shaft calling for watercooled bearings, which are not readily accessible, and the necessity for twin installations where large volumes of air is desired, 80,000 cubic feet per minute or over. The twin installation in turn calls for a complicated system of ducts on the kiln side of the blower which is undesirable.

Without going into the mechanics of fan construction, which is a science in itself, certain principles should be taken into consideration in selecting a fan.

First; efficiency.—The efficiency of a fan is the ratio of the horsepower required to operate the fan to the amount of air delivered at a certain pressure. This does not take into consideration the mechanical efficiency of the driving agent. The efficiency is the ratio of the brake horse power to the horse power output of the fan which consists of the product of the cubic feet of air delivered per minute and the pressure or resistance reduced to footpounds. Thus

$$P\ A\ V = U, \quad \frac{U}{33{,}000} = \text{H. P. in Air}, \quad \frac{\text{H. P. in Air}}{\text{Brake H. P.}} = \text{Efficiency}$$

in which P is the unit of pressure in pounds per square foot (which may be determined by the draft gage), A is the sectional area of the airway, V is the velocity of the air (which may be determined by the anemometer), and U is the work performed by the air current. When it is stated that the efficiency of the disc fan is 30 per cent. when working under normal clay plant conditions, of the blower 45 per cent., and of the Sirroco 60 per cent., than the relative work performed by each type of fan is shown in proportion of the horse power required to operate the fan.

The second principle in fan selection is the speed at which to operate it. There is a limit at which the disc fan can be run and produce results. When run at more than a certain maximum speed the air is simply cut rather than being removed. A peripheral speed of about a mile a minute is considered the best practice. The limit of speed at which a blower can be operated is governed by the strength of the wheel and the horse power available.

Since the horse power required to operate a fan varies as the cube of the revolutions at which the fan is running it is easily seen that *it is cheaper to buy a larger blower or fan and run it slow rather than to speed up a smaller fan.* Hence, if a fan making five revolutions per minute required a twenty-horse power motor to operate it, a fan revolving at the rate of ten revolutions per minute would require $\frac{X}{20} = \frac{10\times10\times10}{5\times5\times5}$, from which we find that $X = 160$ *or that* 160 *horse power would be required to operate this fan.*

The air pressure produced is in proportion to the diameter of the wheel and the quantity of air delivered is in proportion to the width of the wheel.

THAT IDEA OF YOURS

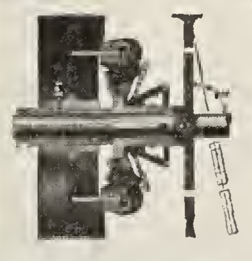
that has been perfected after months of thought, study, and labor and has proved of value to you in the operation of your plant—**Send It In.** Of course, we cannot pay you in proportion to its worth but think of the good it will do the industry, and the prestige that will come to you as its originator.

CRESCENT BELT FASTENERS
insure continuous operation of all machines with absolute freedom from breaking belt joints.
This means a big saving in both belting and time.
Write for Booklet
CRESCENT BELT FASTENER CO.
381 Fourth Avenue, N. Y., U. S. A.
ECONOMY

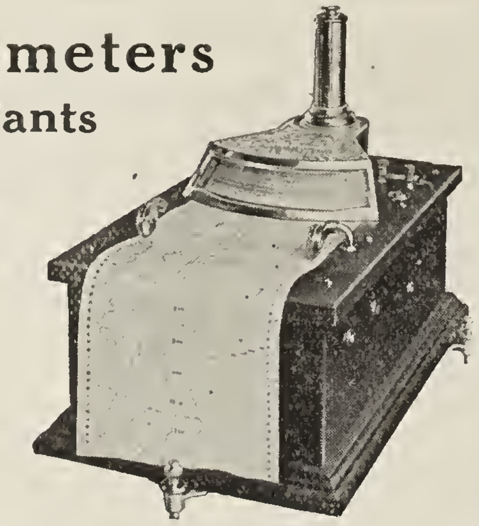
Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.
Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.
Approved by Nat'l Board of Fire Underwriters.
HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

B. & B. Aerial Tramway Systems
Handle any kind of loose material expeditiously, economically and with absolute safety.
Where the grade is sufficient, gravity supplies all the power, and one or two men can operate an entire tramway.
Ask for Catalog 16 giving detailed information.
Broderick & Bascom Rope Co.
St. Louis, Mo.
New York Seattle

Hill Friction Clutches
Collar Oiling Bearings
and
Complete Power Transmission Machinery Equipments
Catalogs upon Request
The Hill Clutch Co.
Cleveland, Ohio
New York Office, 50 Church Street



Hill Friction Clutch Pulley Smith Type
(Patented)

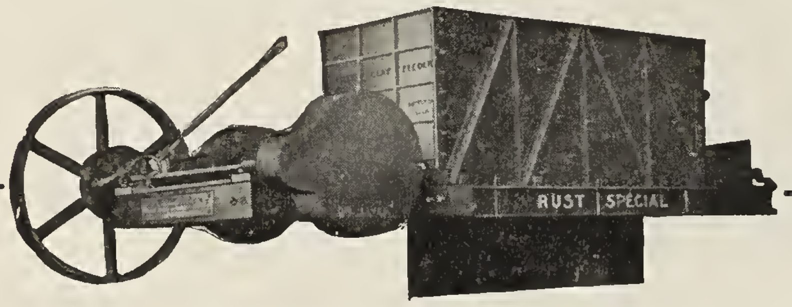


Price Pyrometers on Small Plants

It isn't necessary that you have a large number of kilns before our pyrometer is valuable.

It saves tons of coal, labor and time on the two, three and four kiln plant.

The Price Electric Co.
12367 Euclid Ave.
CLEVELAND OHIO



The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

They Drill Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

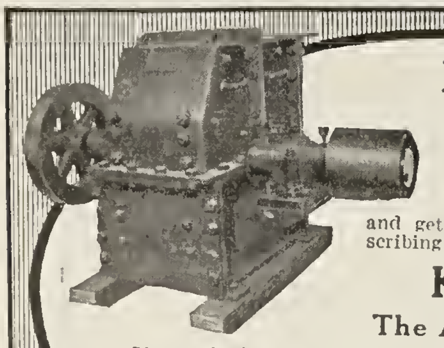
They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. It paid for itself in the first three months; it saves enough powder each year to more than pay for its initial cost."

This is interesting because it is a fact.

Send for Bulletin No. 4.

The Sanderson Cyclone Drill Co.
Orrville, Ohio



Drop us a Line

and get our latest illustrated catalog describing the celebrated

K-B Pulverizer
The All-Steel Hammer Mill

If you don't get out your pencil and do some interesting figuring on power costs you can save, you'll be the exception.

Send for book today

K. B. Pulverizer Company, Inc.
86 Worth St., New York

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

F. W. Straight, of the Auburn (Iowa) Brick & Tile Co., is disposing of his business there and expects to move to California. The change is made necessary by the health of Mrs. Straight.

First Lieutenant F. M. Eliot, for many years connected with the Washington (D. C.) office of the Hydraulic-Press Brick Co., recently left the United States and is now "somewhere in France."

Will P. Blair, secretary of the National Paving Brick Manufacturers Association, is back from Atlantic City, where he attended the war conference of the Chamber of Commerce of the United States.

I. F. Dains, president of the Western Stoneware Co., of Monmouth, Ill., is one of the thousand American business men who attended the big war convention which was held in Atlantic City, N. J., recently.

John S. Haggerty, Detroit brick manufacturer, was one of the principal speakers at the opening of the Michigan State Fair in Detroit. Mr. Haggerty is a member of the executive board of the Michigan State Fair.

S. K. Thompson, of Center Junction, Ia., has purchased the interests of his partners in the brick and tile plant. The plant is now owned by Messrs Thompson and White. Mr. White has been the manager for the past few years.

J. L. Harrison, of the United States Public Roads Bureau, Washington, D. C., has completed an inspection of the brick roads in Cuyahoga and adjacent counties in Ohio, including the brick paved streets of Cleveland, Akron, and Elyria.

Thomas Moulding, of the Thomas Moulding Brick Co., of Chicago, visited the plant of the Buckeye Fire Brick Co., at Scioto Furnace, Ohio, during the week of September 24. While in Ohio he visited the Columbus office of the concern, located in the Hartman Building.

John Steinacker has returned to Stillwater, Minn., from Park Falls, Wis., where he was associated with his brother, Albert, who formerly conducted a brick yard in Stillwater. Albert Steinacker is operating a brick plant at Park Falls and turned out 500,000 brick during the past summer.

H. H. Macdonald, assistant secretary of the National Paving Brick Manufacturers Association, visited Indianapolis recently to attend the convention of the Indiana County Commissioners Association.

John J. Daniels, formerly of Greensboro, N. C., has been engaged as superintendent of the Columbian Brick & Coal Co.'s plant, at Buckeystown, Md. The plant of which Mr. Daniels, who has enjoyed prominence in the clayworking circles of Greensboro, has been made superintendent manufactures hollow ware.

Mr. Charles C. Kreischer, of 214 Cathedral Parkway, New York City, died recently at the age of sixty-seven years. Mr.

Kreischer was born in New York City and was a member of the firm of B. Kreischer & Sons, manufacturers of brick, with factories at Kreischerville, Staten Island, New York. Recently Mr. Kreischer was connected with the National Fireproofing Co., whose offices are in the Flatiron Bldg.

Bernard W. Figgins, Baltimore (Md.) manager of the Hydraulic-Press Brick Co., is now serving with other members of the Maryland Naval Militia on the United States Battleship Massachusetts. Mr. Figgins holds the rank of ensign. His wife and family are spending their time with relatives in West Virginia until his return. In charge of the Baltimore office now is Mr. Figgins' very capable and charming young secretary who holds up her hands in dismay when asked her name. She wouldn't *have* her name in *Brick and Clay Record*—not for worlds!

If you go to the door of the Filbert Brick Co. office in the old Builders' Exchange Building, in Baltimore, Md., you will not get in. There is no one there; for the activities of the Filbert Brick Co. for the present have ceased, in the interests of patriotic expediency. Samuel W. Filbert, president and general manager of the concern, is at Camp McClellan, Anniston, Ala., serving with his command, the Fourth Maryland Infantry. Mr. Filbert is not Mr. Filbert down there. He is Lieutenant Colonel Filbert. In a letter to his wife recently, Mr. Filbert stated that altho he had been a military man twenty-five years, he had never encountered such rigid discipline as prevailed at Camp McClellan. "I'm just beginning to learn," he said.

California

Gladding, McBean & Co. have been awarded the contract to supply vitrified sewer pipe for a sanitary sewer system at Corcoran, Cal., a town in the San Joaquin Valley.

There are ample stocks of standard terra cotta products on hand in Pacific Coast factories for immediate demands, but the demand is not brisk. The various plants are operating steadily and the quantity of special terra cotta work produced is pretty well up to the average.

F. A. Costello, president of the California Pottery Co., San Francisco, says the Oakland plant is running to capacity and that the season's business has been normal in spite of many adverse conditions. This company is supplying fifteen carloads of the government order for sewer pipe to be used at Camp Fremont.

The mills of the Piedra Magnesite Co., near Fresno, Cal., are now almost completed. The building and equipment cost $55,000. The company, which is controlled by J. T. Curran, J. W. Thomas and W. Phillips of Porterville, has bought fourteen magnesite mining claims from M. F. Tarpey, from which it is expected to produce about 1,800 tons of crude ore monthly.

All the California manufacturers of first class fire brick are working to capacity as far as they can secure efficent workmen. Deliveries are rather slow. The railroads and gas companies consumed a fully normal quantity of fire brick the past summer, and the number of new industrial plants erected on the Coast stimulated the demand far beyond normal. Prices remain firm at present, but advances are expected.

The California sewer pipe business has not been brisk this season, yet it has been helped out by government orders of importance. Municipalities are doing little in

ORIGINAL Boss SYSTEM

COMMON SENSE APPLIED TO

Drying and Burning

ORIGINAL Boss SYSTEM

Boss Ten-Hour Dryer

Would you like to really dry your brick and do it in half less time?

Boss System of Burning Brick

Would you like to improve the quality of your brick and reduce your cost of burning?

Then write for information and we'll SHOW YOU HOW!

JOHN C. BOSS COMPANY

Monger Building - Elkhart, Indiana

"CRIMORA"

That's the MANGANESE you should always use—then you can sell your trade a real specialized brand of brick in

BLACK, SPECKLED OR GREY TONES

Also—you can always depend on CRIMORA MANGANESE DIOXIDE to produce the exact grey-black facings you desire. We can furnish it in any grade or size desired.

Crimora Manganese Corporation

30 East 42d Street New York

SIL-O-CEL PREVENTS HEAT PENETRATION TRADE MARK

MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY

NEW YORK 11 Broadway CHICAGO Monadnock Bldg PITTSBURGH Oliver Bldg LOS ANGELES Van Nuys Bldg SAN FRANCISCO Monadnock Bldg

Write nearest Office for Samples and Information

Base Metal Couples and Low Resistance Instruments are absolutely unfitted for use on Clay plants.

We do not and we will not sell that class of equipment for measuring temperatures exceeding red heat.

STUPAKOFF PYROMETERS

for high ranges of temperature are equipped only with rare metal couples and high resistance galvanometers. They are dependable and we guarantee satisfaction.

The Stupakoff Laboratories

Pittsburgh, Pa.

the way of sanitary engineering. The high labor and material costs have retarded much needed work. If no lower schedules prevail next season, the various communities will probably have to go ahead with the necessary work, regardless of costs.

Last week the government placed an order for forty carloads of sewer pipe with California manufacturers. The product needed is vitrified pipe 18 inches in diameter and less. It is to be used in installing a sewage system at Camp Fremont, Menlo Park, Cal. The pipe contracted for would lay to a length of about fifteen miles. The companies who are to supply the material are: Gladding, McBean & Co., N. Clark & Sons, Steiger Terra Cotta & Pottery Co., California Pottery Co., and the Pacific Coast Pottery Co. Shipments to Camp Fremont have already begun, and all companies are cooperating to avoid delay in the urgent government work. The difficulty in getting cars is the only drawback, for there is stock available for immediate delivery. The Steiger company and N. Clark & Sons, both of which concerns have had their sewer pipe plants destroyed by fire in the past year, will be practically cleaned out of sewer pipe after making their share of the deliveries to the government.

Industrial complications resulting from the several big labor strikes on the Pacific Coast are becoming acute, and it is probable that much building will have to be delayed until the situation shows more stable tendencies. The strikes in the lumber industry in the Northwest and the metal trades in California are serious and have a direct influence upon the building trades in general. Also the scarcity of labor in the clay products plants makes it impossible to promise prompt deliveries. The cost of manufacturing has gone up steadily, and the prices of products also, but not in proportion to the increased cost of manufacturing and handling. Common brick in the San Francisco Bay region remains as usual on a ten-dollar basis, and the cost of sewer pipe has advanced no more than five per cent. the past summer. Prices on pressed brick and terra cotta products are harder to gauge by reason of the great variety of materials put out, but it is safe to say that the advances are comparatively slight. The summer's demand for common brick has been about the same as in the last four years, or approximately five million a month from the San Francisco Bay plants. These concerns supply a trade within a radius of 150 miles of San Francisco. Freight rates prohibit competition for greater distance, as a rule.

The Lindgren Company, general contractors of San Francisco, are receiving the congratulations of the trade upon the record made in building the Great Southern Pacific office building on lower Market St. This is the largest office building west of Chicago, covering an entire city block, and the contractors had only a year in which to have the structure ready for occupancy. The building has been completed a few weeks ahead of time, notwithstanding the many industrial vicissitudes of the past year, and the railroad company has moved in. Over a million common brick were used in the great structure, besides the pressed brick for facing, and the terra cotta trim. To illustrate the advantage of building large structures of brick may be cited the sad case of the California Theater, at Fourth and Market streets. This is a concrete building; it has been under construction practically as long as the now-completed Southern Pacific Building,

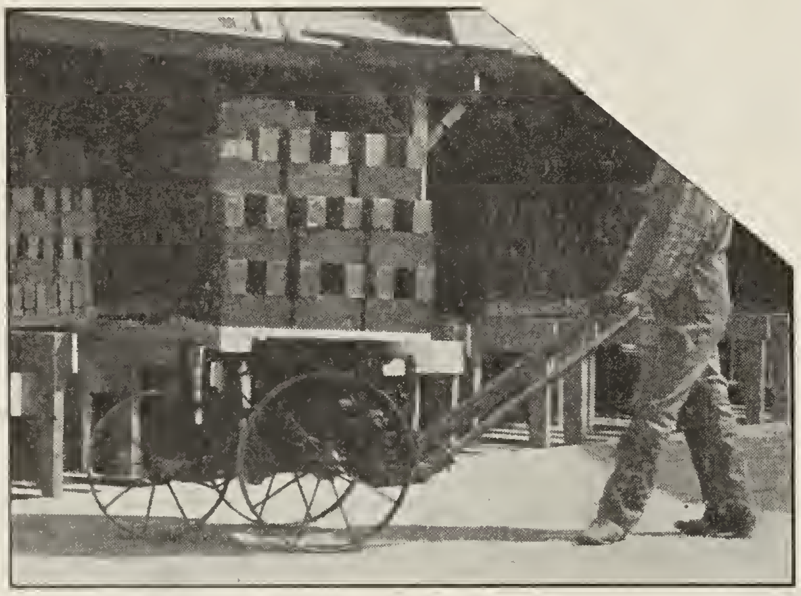
DUPLEX
4-Wheel Drive Truck

The Duplex has the strength, the irresistible power and endurance to perform efficiently the most severe haulage tasks. It is a durable, all-year-round motor truck, and has the stability that insures long life.

Let us send you data showing how profitably the Duplex is solving haulage problems. Address all communications to Dept. 128.

Duplex Truck Company
Lansing,
Mich.

Cut Your Labor in Half



With the Drymore System your labor expense is cut in half because
ONE MAN TRUCKS YOUR OUTPUT
from the cutter to the drying shed. The brick are better in quality and appearance because
YOUR BRICK ARE NOT REHANDLED
individually after being placed upon the pallet at the cutter.
NO RAILS; NO TRANSFER CARS; NO TURNTABLES
There are four Drymore Systems—all worth investigatio
Drymore—
FOR LESS
DRYMORE SYSTEM Galion, Ohio

yet the theater is far from being ready for occupancy. This building is perhaps not one-tenth the size of the Southern Pacific Building. Brick experts in San Francisco claim that the California Theater could have been finished three months ago if brick had been chosen as the building material, and that the owners could have been reaping a harvest of profits in the meantime. Any difference in cost would probably have been more than made up by the several months' additional theater profits.

Connecticut

Altho brick manufacturers in New Britain, Conn., continue to make brick, most of them are expecting to close their plants within a few weeks. Operations will continue until the frost gets well into the ground. Brick men look upon the season just closing as a good one, both from the viewpoint of the manufacturer and the dealer. There has been a good demand for brick, due in large part to the many new factory buildings erected in this state.

District of Columbia

The greatest amount of trouble is being experienced by brick yards in and around Washington in obtaining labor. Apparently men cannot be obtained at any price and this has caused serious inconvenience. The freight situation is also very bad at the nation's capital and the local yards are not promising shipments outside of Washington to any one. There has been very little trouble lately, it is reported, with coal. There seems to be a normal supply available. The common brick situation which has been rather acute, because of shortage, is seemingly much improved. The local common brick plants are catching up with their orders.

Indiana

The Chicago Sewer Pipe plant in Brazil, Ind., has suspended operations for the winter.

The Indiana Paving Brick and Block Co., of Brazil, Ind., reports a fair volume of business. This company is considering the possibility of developing its own clay deposit to a greater extent. Walter Acheson is now superintendent of this plant.

P. C. Farris, superintendent of Hydraulic-Press Brick Co., Brazil, Ind., is having his mine tunnels retimbered at present. A small pond nearby, gives considerable trouble at times owing to its tendency to cause cave-ins and flood the mine.

The National Fireproofing Co.'s plant at Brazil, Ind., is busy manufacturing silo block, hollow building block, and electrical conduits. A. W. Beidler, superintendent of this plant, is the designer of the oil-storage house described in our "Superintendent" department this issue.

The Clay Products Co., of Brazil, Ind., is very busy manufacturing electrical conduits. Their new battery of eight steel-encased kilns is proving entirely satisfactory and is cutting down the time required to burn their ware. C. F. Shannon is secretary of this concern.

The American Sewer Pipe Co.'s plant at Brazil, Ind., is opening a new pit from which to obtain its clay. A steam shovel has been installed and a pit of about thirty feet wide, by two hundred feet long, by fourteen feet deep has already been excavated, F. J. Carnahan is superintendent of this plant.

The Brazil (Ind.) Hollow Brick and Tile Co., of which D. A. Sherfey is superintendent, reports that it is having difficulty in obtaining sufficient cars in which to ship its products. This company reports a good demand for its silo

HETTRICK RED STITCHED CANVAS BELTING

Beats Them All

It is made from long staple cotton, giving maximum strength and elasticity.

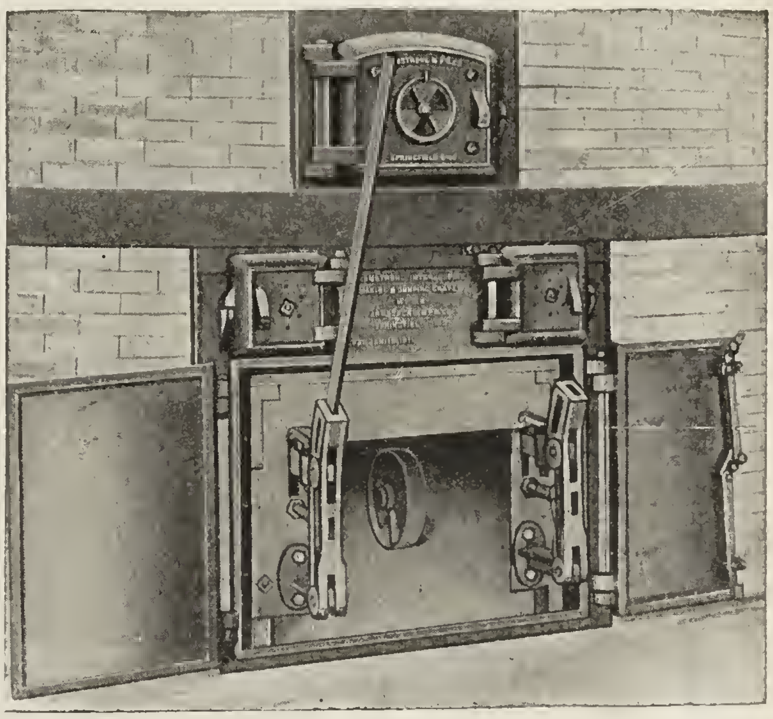
All possible stretch is removed from the belt without weakening the fabric.

It is properly oil processed, and red dressing applied to preserve the fabric.

Finally the completed belt—is cured.

Progressive, profit-paying clay-product plants are **standardizing** by adopting "Hettrick." Let us send you the names of users for further investigation. Write for them today.

Hettrick Mfg. Company
Toledo, Ohio



Just one movement of the dumping device of the

Standard Interlocking Kiln Grate

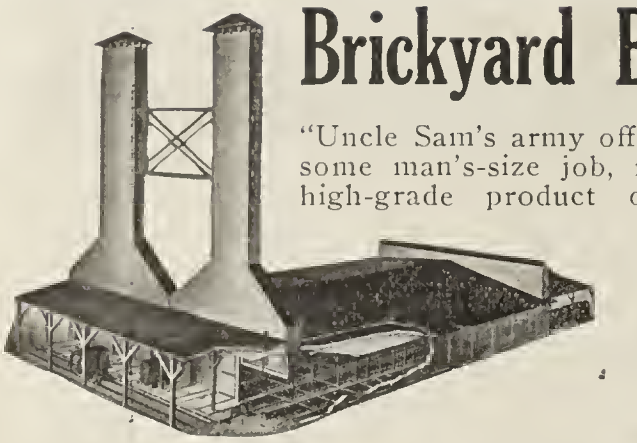
entirely cleans the fire—clinkers as thick as six inches are easily handled.

This is only one of many points of superiority that make this the ideal kiln grate for every brick plant.

We install it at our expense—you give it a thoro trial—if it doesn't do all we claim we'll remove it without any cost to you.

Write for details and prices.

The Armstrong Manufacturing Co.
SPRINGFIELD, OHIO



Brickyard Bill Says:

"Uncle Sam's army off'cers has sure got some man's-size job, makin' a uniform high-grade product out o' all them diff'runt v'rieties o' green, m'terial. But it kin be did. Th' Standard Brick Drier's been a-doin' it f'r thutty years."

The Flexible Heating System of

The Standard Drier

makes it applicable to ALL clays and ANY steam conditions. There is nothing theoretical about The Standard Drying System. The piping is applied in the manner that our long experience has demonstrated to be most efficient in meeting the requirements of the various natures of clays. The heating apparatus is FITTED to the NEED in every case.

Write for complete description and free estimate. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

Gold Medal Award

PANAMA-PACIFIC INTERNATIONAL EXPOSITION SAN FRANCISCO
MEDAL OF AWARD
MCMXV

Panama-Pacific Exposition
for

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Their Merits are Vouched for by Hundreds of Satisfied Users
Ask for our New General Catalog No.8

THWING INSTRUMENT CO.
3336 Lancaster Ave. - Philadelphia, Pa.

block. The plant is on the site of the old Weaver plant which a good many years ago, manufactured stoneware pumps. Many of these pumps can still be seen in the Brazil district.

The old Sheridan plant at Brazil, Ind., which was taken over by the Clay Products Co., last January, is busy making interlocking tile and silo block. Mr. Hansley, who is superintendent of this plant, states that he is considering putting in a new dryer. This plant, which obtains its clay from the deposit furnishing the clay for the other plant of the Clay Products Co., is also planning to develop the deposit located on the grounds near the plant.

The Brazil (Ind.) Clay Co., of which Mr. Hill is superintendent, experienced a little trouble recently when the crown of one of its kilns fell after the kiln had only been on fire for a few days. Probably due to the extreme internal pressure caused by the formation of steam from the rain which leaked in on that day, the upper steel band broke and as a consequence the crown fell in. Mr. Hill is now having new small steel bands placed around the older large bands to brace the crown so as to prevent another such occurrence.

At a recent receiver's sale the entire property of the Indiana Brick Co., whose plant is located one mile east of Anderson, Ind., was sold as a whole for $33,635.45. The highest bid was made by John A. Alldredge, a local real estate agent who, it was understood, represented several parties, including some of the large creditors. The only other bid for the property as a whole was made by E. M. Wilson, of Anderson. The sale will be reported to court for approval. The property was first offered in twenty-seven parcels and the total sum of bids was $25 less than the lump sum bid With the brick factory and its equipment there were also included several tracts of land, a total of about 280 acres. From all of the land except one forty and one fifty-acre tract, the top soil has been removed for making brick. The highest bid for any of the land was about $100 an acre. The top bid for the factory alone was $7,050. For office equipment the high bid was $115. All parcel bids, however, were set aside by the sale as a whole. Mr. Alldredge and his associates will not announce their plans until the sale is acted on in court. J. J Netterville is receiver for the Indiana Brick Co.

Iowa

The Morey Clay Products Co., of Ottumwa, Iowa, has recently installed a shale planer.

The Des Moines (Iowa) Clay Co. has put in an elevated track so that clay can now be automatically dumped into the storage shed. The track has proved a big labor saver.

Clay producers in the Des Moines territory are watching with interest for the opening of the new gas fired kilns of the Adel (Iowa) Clay Products Co. The gas producer has been installed and the connection to one kiln established. It is intended to connect all of the ten kilns, but inability to secure sufficient deliveries of the Indiana coal which is necessary, is holding back the complete installation. For the present at least, only one kiln will be operated on the gas.

Sheffield, Iowa, promises to become one of the important clay products centers of Iowa. For years the Sheffield Brick & Tile Co. has operated a large plant and now C. C. Carhart, who owns the controlling interest in that company, has a new plant under construction which, it is expected, will be completed about January 1. Electric-driven equipment thruout and twelve steel encased kilns have been built.

In addition to the two above-mentioned plants C. L. Smith, formerly with the American Brick & Tile Co., at Mason City, has the grading done and will start constructional work at once on a new plant at Sheffield.

Iowa clay products manufacturers, in company with nearly all large employers of labor, are beginning to feel the pinch of labor shortage keenly. The loss of men who enlisted in the various military organizations, followed by those who were drafted for service has hit the brick and clay plants heavily. Des Moines feels the shortage, probably more than the smaller cities of the state, and the problem at that point has become a serious one. Two of the local plants have advertised in the daily papers almost daily for the past six weeks for men. It is estimated here that the production in Iowa will be reduced twenty per cent.

Kentucky

One of the really large building contracts recently placed in Louisville, Ky., was that calling for $1,300,000 common brick for the new Aetna Refining Co., deliveries to begin at once, which was placed with the Coral Ridge Clay Products Co.

With the P. Bannon Pipe Co., Louisville, Ky., things are also humming, and the officers of that company are much pleased with the fine reception that has met its new line of fire brick being made at the Magnolia plant. One contract has been closed with the Aetna Refining Co. for 200,000 of these brick, to be used in refining kilns. The company has been delivering building brick for some time on the new refinery of the Standard Oil Co.

There has been a notable improvement in the demand for brick during the past month, and the majority of the brick manufacturers of the Louisville district are comparatively busy. Labor is short, and this shortage is the biggest thing that the industry has to contend with, the coal situation probably being next most important, with the car supply trailing along as one of the troublesome factors which will undoubtedly grow worse as the fall advances.

J. H. Bell, of the Louisville (Ky.) Fire Brick Works, stated that at the close of September the company was just about 2,000 cars behind on orders. When the combined capacity of the two plants is figured at fourteen cars a day, it is seen that the company has business on hand that will keep it going for several months to come. At the present time orders are being continually turned down; the company is figuring merely on getting out standing orders and not on new business.

While it is generally thought that government supplies are getting the preference where cars are needed by shippers, such has not proven the case in all circumstances. For instance, at the Grahn, Ky., plant of the Louisville Brick Works, since September 17, about two cars a day are needed on government orders alone, but only about twenty-five to thirty per cent. of these cars have been delivered. This plant is only about thirty miles from Ashland, Ky., on the C. & O., and better shipping facilities could be expected.

Members of the Louisville (Ky.) Brick Association, at a luncheon meeting on October 1, endorsed a campaign which will have as its purpose the general revising of the building code in Louisville, plans having been laid to have the code more favorable to brick and other fireproof materials. An attempt will be made to obtain the co-operation of all the other local people interested in

Marion
Steam Shovels, Dredges, Draglines and Kindred Machinery

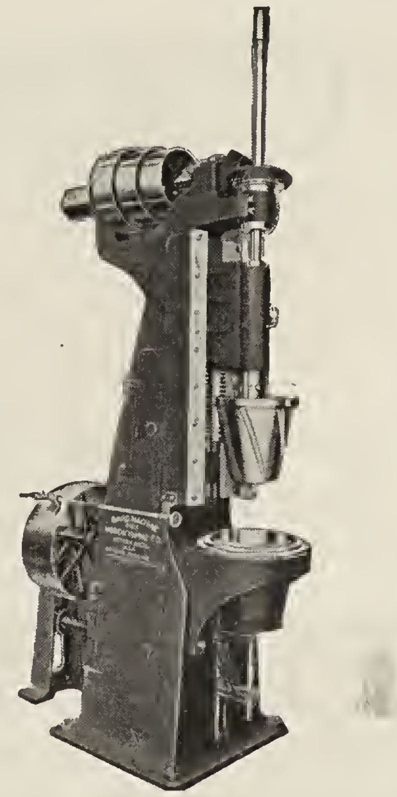
SAYRE & FISHER CO., Sayreville, N. J., large manufacturers of building brick, judge the machinery they use largely by the way it stands the test of the years—which is exactly the way they expect their own customers to judge "Sayre & Fisher Brick."

Sayre & Fisher Own 4 "Marions" —One in Steady Use For 22 Years

and ALL doing good work every day. The digging consists of such hard-to-handle materials as tough blue clay, and of course there is lots of it.

Perhaps there's work in *your* plant for "Marion, the Clayworker's Shovel." May we help you decide? No obligation to you!

The Marion Steam Shovel Company, Marion, Ohio
Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle
221 ESTABLISHED 1884

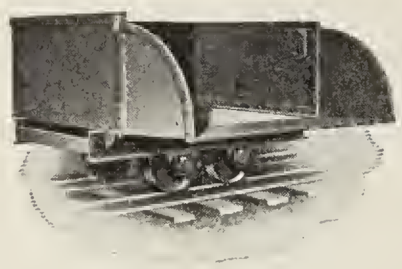


FLOWER POTS

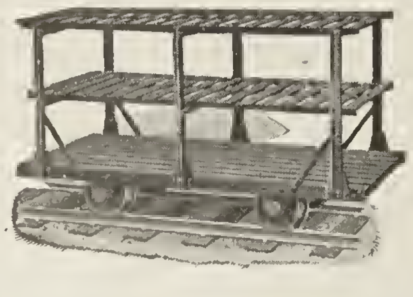
You can manufacture them on most any brick or tile plant as a profitable side line. Send us a sample of your clay. Let's find out if you can do it.

BAIRD MACHINE & MFG. CO.
54-56 Jefferson Avenue Detroit, Michigan

TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.
RECORDING PYROMETERS
BRING THE KILN INTO THE OFFICE
—right to the Superintendent's desk, giving him more time to do brain work.
The recorders bring him records in permanent form of the temperatures at the kiln. He can compare today's temperatures with that of yesterday, a month ago, or a year ago.
Down at the kilns an equal number of Bristol Indicating Pyrometers act as a guide for the burners. Team work of this sort eliminates all guess work and the resulting inefficiencies.
Suppose you allow us to show you how you also can increase team work and efficiency by the use of Bristol's Recording Instruments.
Write for Bulletin 163.
THE BRISTOL COMPANY, Waterbury, Conn.
Branch Offices:—Boston, New York, Pittsburgh, Chicago, San Francisco



WATT
CARS
"AT FIRST OR AT LAST?"
They stand for efficiency and durability. **Ask for catalogues.**
The Watt Mining Car Wheel Co.
Barnesville, Ohio, U. S. A.



handling fireproof building supplies of any kind. The present building code in Louisville, it is said, is inadequate and was made up many years ago when conditions were entirely different from those existing today. To work out the details of the campaign the organization has appointed the following committee: T. Bishop, Ike Taylor, and J. T. Howington.

For several weeks rumors have been floating around Louisville, Ky., to the effect that a general advance on hollow tile is coming shortly, and according to local manufacturers such an advance is now essential, and will be made in the near future, due to the big increase in the cost of coal, labor, etc. The coal situation is no better and in fact worse than it was last month. The strike at the Kentucky mines has held out much longer than had been expected; with mine labor scarce, and high, and a shortage of cars and motive equipment, the prospects are for slow deliveries and high prices. The outlook points to sky high prices when the big winter demand hits its crest. Locally the brick manufacturers have not much storage space and haven't anything like the amount of coal on hand which they will require.

Herman Wischemeyer, architect of Louisville, Ky., who is chairman of the committe of the local building trades which is working out plans for handling the building publicity and educational campaign to stimulate building interest, reports that the work has progressed so well that it has been decided to go ahead with the campaign as outlined some weeks ago. A great deal of work is required in getting the various building organizations to arrange to pay in their pro-rate of the expense of the campaign, and numerous details are yet to be worked out before anything is actually started. After the heads of the various associations have indicated what they are willing to do, the rest of the work will be comparatively easy. The brick men have already decided just how far they are willing to back the movement financially.

While the Louisville (Ky.) brick men in their local association have been too busy to take up all of the important things this season that should have been considered, indications are that one of the first matters taken up in 1917 will be that of "Trade Acceptances," as a standard credit form in the building trades. It has recently been learned that the leading lumber operators are endeavoring to work trade acceptances into their business. One of the big lumber organizations of Louisville has passed favorably on such terms, after numerous special meetings at which the matter was thoroly discussed. Such acceptances are of great benefit to the jobber and also the manufacturer, the small producer being able to deal directly with the small consumer, who in the building field is probably the supply jobber, contractor, or builder. While such acceptances would tend to make it possible for the consumer to buy direct, and consequently take some business from the jobber, at the same time it would enable the jobber to obtain ready money at times when cash is needed. The Louisville association during the past year has been endeavoring to obtain prompt payment on brick sales thru making discounts so large that the buyer could hardly afford to pass up the chance to take advantage of them.

Maryland

For the purpose of manufacturing fire brick, the Howard Refractories Co. has been formed at Baltimore, with head offices in 619 Equitable Building. The company has been formed with a capital stock of $150,000.

A new brick plant, erected at a cost of $300,000 has just been completed by the Maryland Coal Co., at Lonaconing, Md. The plant is about ready to begin shipments, and with the enormous resources and alliances of the Maryland Coal Co., a steady market for the output is assured. The plant is located within ten miles of that of the Union Mining Co., at Mt. Savage, Md., and the quality of soil is much the same. The plant will manufacture fire brick, and will also produce other materials, as the plastic clay there admits of many uses. The officers of the Maryland Coal Company's Clay Products Plant are the same as those of the Maryland Coal Company, with Gordon Smith, the vice president, in active charge. The headquarters of the company is at 1307 Munsey Building, Baltimore, Md.

The sluggish condition in building circles in Baltimore continues to have a noticeable effect on the brick market. Manufacturers who in the past have not handled fire brick are now, so far as possible, entering that field, for it is the only one where trade is normal. Indeed, in this line it is somewhat above normal. Prices in all branches of the industry continue high, but none so high as labor. With the ascending cost of all building materials, builders are holding up all operations, futilely hoping for a reduction in costs; there is no real estate development activity of any importance, and the men who build their own homes are "waiting until the war is over." As an instance of how Baltimore people feel about the high cost of materials, an advertisement was carried on the front pages of all the papers, announcing that owing to the high cost of building materials and supplies, the proposed big hotel to be located in the heart of the business district would not be built until normal business conditions returned. This incident came to the public notice because the improvement involved a solid block of expensive business properties and was regarded as a most important civic advance. But it is representative of the attitude of the bulk of smaller builders, and is one of the big reasons why the brick trade in Baltimore is torpid just now.

Michigan

H. N. Barr, manager of the Michigan Face Brick Co., of Grand Rapids, Mich., states that the brick business is very good in his territory. Many orders for brick for school buildings, factories, churches, hospitals, and nurses' lodges have been and are being filled by him.

Fred McDonald, a Detroit (Mich.) brick dealer, said recently: "Business may be somewhat dull in some lines, but the demand for brick this year would indicate construction in many lines, such as school buildings, factories, churches, hospitals, nurses' lodges and apartment buildings, has been and still is nearly normal."

Freight conditions in and around Detroit, Michigan, have improved during the past sixty days, and it is now possible to get shipments within a reasonable space of time, altho there is still considerable room for improvement. The moving of government troops interfered for a while with the roads, but the bulk of this traffic being over with, railroads are moving freight more speedily than before.

The F. H. Wolf Brick Co., of Detroit, Mich., has disposed of forty-seven acres of ground on the west side of the city for approximately $6,000 an acre, or a total of $285,000. The property is located at the junction of Central Avenue and the Michigan Central Railroad, and is an excellent factory site. Twenty-seven acres of land in

RINO
LUBRICANT

Everything must last longer—and do more

Today, that is an axiom, it is imperative, things must not wear out when it is possible to prevent excessive wear. RINO compound for gears and wire rope serves to prevent wear—marvelously. Send for sample.

The Ohio Filler & Shield Co.
Columbus, Ohio

The Minimum Gain

They pay for themselves in one year and in addition will save you $300.00.

Cyclone Boiler Grates

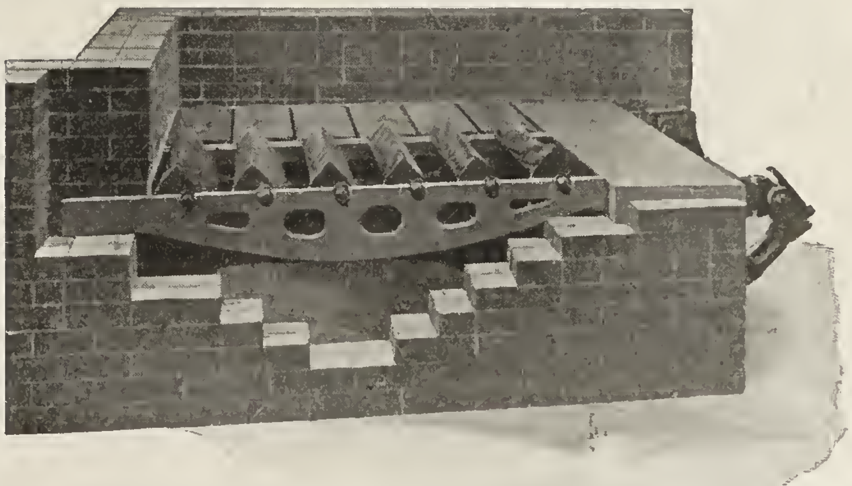
are sold to you with a guarantee that they will save 10% of your coal bill and on 90 days' trial.

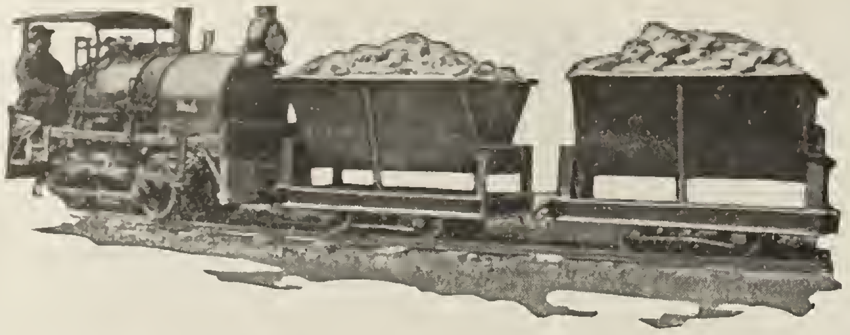
This guarantee and trial offer prove absolutely that we know these grates will do as we say they will do.

They-will-save-you-big-money. It is Guaranteed.

Get the details from the

Cyclone Grate Bar Company
Buffalo, N. Y.





Bell Steam Locomotive Hauls Clay

farther, faster, more of it and cheaper than mules, man power, electric, gasoline or coal fired locomotives.

It Burns Kerosene

costing Nine Cents per Gallon, requires no licensed engineer, is easy to run and the upkeep is low.

It's a dandy for your work.

Write to the

Bell Locomotive Works, Inc.
30 Church Street New York

You can get a higher price for your brick if you guarantee it will be

Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H.—the dependable brand.

Write for circular and prices.

The Roessler & Hasslacher Chemical Company
100 William St. New York

Chicago, Ill. St. Louis, Mo. Philadelphia, Pa.
Cincinnati, O. Kansas City, Mo. Boston, Mass.
Cleveland, O. San Francisco, Cal. New Orleans, La.

We carry a complete line of high grade chemicals for the clay industry

the same vicinity has been sold by George H. Clippert & Brothers Brick Co., for a consideration of $160,000.

Some three million common brick will be used in the new factory in course of erection in the northwest part of Detroit for W. C. Leland and Son, formerly at the head of the Cadillac Motor Car Co. Their new business is to be the manufacture of airplane motors and they are said to have already received a $70,000,000 order. It is their prediction that the plant will be the largest of its kind in the United States and that it will be the means of bringing other airplane factories to Detroit and making it as important a center for airplanes and motors as it now is a center for motor cars.

Missouri

So far as the "Mexico (Mo.) Ledger" is able to learn, the A. P. Green Fire Brick Co., of that city is the only concern in the state voluntarily making effective a workmen's compensation law. Mr. Green was active during the last legislature in trying to have a workmen's compensation law adopted, and when no action was taken he devised from the laws of Illinois and Ohio a composite law, which he has just put in effect at the Mexico plant.

New Jersey

Coal is short and some brick yards are paying $6.50 a ton for the little they can get. Some will not burn any more this season, but those that have arches laid up will have to finish them.

One reason for the shortage of labor in the New Jersey district is the construction of the Dumont cantonment. Fabulous wages are being paid workmen and every other industry is suffering. To be sure this rush will soon be over, but for the present it is a problem which is causing many a manufacturer considerable anxiety.

The Garner Brick Works, of Haverstraw, N. Y., are preparing to install a locomotive to haul the cars in which they convey the clay from the bank to the pug mill. This work is done by horse now and each car requires the services of a man to drive it. The engine will do it much more rapidly and with less men, in fact, the company hopes to release at least two-thirds of the men now employed in driving these carts for other work about the yards, such as loading cars and other operations which now lag because of lack of help. This is the first application of the locomotive to brickmaking along the Hudson.

Apparently the shipping situation in New Jersey will grow worse instead of better. Those yards which are located along the rivers and have their own shipping facilities are extremely fortunate. Others are in difficulties all the time and more than one building development is held up because it is quite impossible to obtain cars or men to load them. More yards are suffering because they cannot get men to do the work on the yards. In fact, the situation is becoming serious for those builders who have important operations under way, for which they are clamoring for brick to get their work along before the cold weather comes.

Brick are $12 per thousand delivered on the job in and about Paterson, N. J., and the demand exceeds the supply. Probably the demand is larger than it has been at any previous time this year. N. H. Sloan, agent for the Garner Brick Works, Haverstraw, N. Y., has sold nearly a million during the past week for a government job at Lake Denmark. He is now more than 2,000,000 behind on his orders for two reasons: It is impossible for his firm to get cars and if they succeed in inducing the railroad to allow them to have a car or two they can get no men to load them. Very many more brick could be sold in this vicinity if the shipping facilities and the labor to attend to loading could be obtained.

William Agnew, a prominent Paterson (N. J.) dealer in brick and other supplies, looks for a revival of building in the near future, pointing out that the location of the largest shipyard in America but a few miles from Paterson will stimulate house and apartment building there. He says, too, that two new factories are in course of construction in Paterson which will bring in a large number of skilled workmen, each of whom will want a house, or apartment, and none are now available. It means a big building movement as soon as general conditions improve sufficiently to enable builders to go ahead with their proposed developments.

Newark, N. J., continues to hold its own in the building of new structures during war times and unless all signs fail Newark is going to finish 1917 with the best record for new work it has had in a long time. For the first three quarters of 1917 plan filings indicate a total value of $6,934,916, as against $6,077,384 for the first nine months of 1916. This shows an increase for 1917 of $857,532. September, 1917, plan filings aggregated $616,289, as against $579,573 for September, 1916. Irvington reports only $28,000 for September, 1917, as against $261,564 for September, 1916. East Orange, Newark's fashionable residential suburb, reports about $100,000 for new buildings September, 1917, while last year for the same month it reported four times as much.

Ohio

The Columbus (Ohio) Brick Club is planning a publicity campaign, which will be run in conjunction with the national publicity campaign under the auspices of the American Face Brick Association.

The Star Fire Clay Co., recently organized at East Liverpool, Ohio, is operating its plant to capacity and is shipping large quantities of fire clay daily. Willam McDonald, of New Cumberland, W. Va., one of the main stockholders of the new concern, will move to East Liverpool.

Common brick in all parts of Ohio are still in good demand—a condition which constitutes probably the best feature of the brick trade at this time. This class of material is used extensively in factory construction, which is going forward rapidly, due to the demands for war materials. Common brick still sell between $10.50 and $11.50. It is believed an advance will be announced in the near future.

The Ohio Highway Commission will open bids October 12 for about twenty pieces of road improvement in various parts of the state. Among the number are ten contracts in which brick is to be used. They are in Ashland County, three sections; Huron County, 1.68 miles; Mahoning County, 1.5 miles; Seneca County, 1.55 miles; Stark County, 1.17 miles; Summit County, 2.08 miles; Wayne County, three sections aggregating four miles, and several others where bids are asked for on brick as well as other materials.

Cleveland brick manufacturers and distributors are considering seriously a plan for co-operating with housing constructors in order to relieve the stringency in homes in Canton, Ohio, sixty miles south. An industrial boom has has gripped Canton, and real estate men now estimate there is a shortage of 2,000 houses. According to Frank I. Cole, thousands of families are turned away yearly because there are not enough low priced houses for rent or sale.

Look This Car Over Carefully

Note the way it is braced, and the manner in which it is put together. Stout and rugged, capable of resisting dipper hammering, big chunks dropped into it, derailments, etc. In addition it is Bottom Dump, it does not hammer itself to pieces when dumping.

The Youngstown Steel Car Company
Youngstown, Ohio

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.
Cleveland, Ohio

Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

The Analogy Between Fire and Water, Scum and Rollin's Barium Carbonate

IS PERFECT

Rollin's Barium Carbonate eliminates and smothers the scum just as effectively as fire is smothered by water.

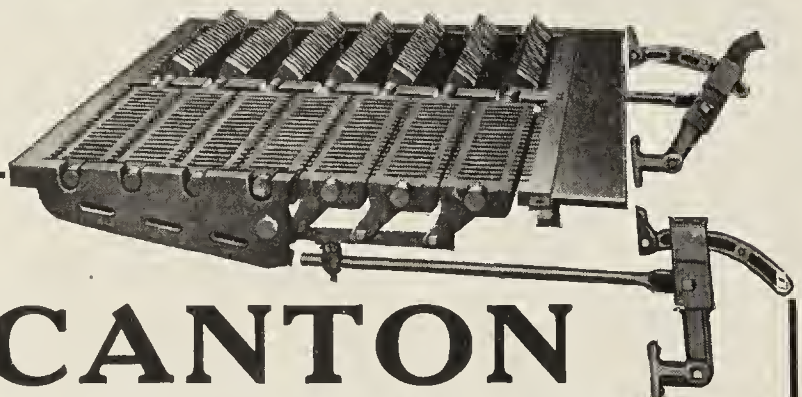
Add "Rollin's" at the pug mill feeder; it renders insoluble and harmless the scum-producing sulphates that are in your clay.

If you are bothered with scum on your ware, either in the drying or burning process, or after it is layed up in the wall—you particularly should use

Rollin's Barium Carbonate

Rollin Chemical Company
Inc.
Charleston, West Virginia

General Sales Agents
National Aniline & Chemical Company
244 Madison Ave., New York City



CANTON
Shaking and Dumping
GRATES

Not a TRIAL Nor An EXPERIMENT

When it comes to saving fuel, keeping the fires clean, removing clinkers and ashes easily, these grates have proved their practical utility for many years.

The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

When you want Grates—don't forget to investigate the merits of the Canton Boiler Grate. Write for catalog.

THE CANTON GRATE CO.
1706 Woodland Ave.
CANTON - - - - OHIO

One of the worst drawbracks to a more active brick business in Ohio territory was the announcement by traffic managers of railroads that all available box cars are to be sent south for lumber and west for grain. This effectually stops shipments of brick and is having a bad effect on the trade generally. Many contracts which were being shipped will be held up until the order is rescinded. It is understood that the order emanated from the Federal Defense Council.

Evidence of the improvement in building operations in the Cleveland, Ohio, district is indicated by the unusual orders recently placed with the Cleveland Builders Supply Co. One is that for the addition to the Grant Motor Works Co., in the east end of town, which will require approximately 1,000,000 brick. Another important order, altho not notable for extreme size, is that for the face brick for the boiler house for the Cleveland Art Museum at Wade Park.

Relief from a deplorable condition is seen in the opportunity offered in the proposed paving of the three main thorofares of Lakewood, a suburb of Cleveland having a population of 50,000. Madison Avenue, for three years has been a mire. Detroit and Clifton Avenues are a series of holes from one end to the other. This is proposed to be changed, thru the passage of an ordinance asking $500,000 bond issue as the city's share in the $1,000,000 paving plans. It is proposed to start work next spring.

The announcement was made recently that the Ohio State Brick & Stone Co., of Columbus, which is operating a fire brick plant at Shawnee, Ohio, has purchased the plant of the New Lexington Clay Products Co., at New Lexington, at which it will manufacture fire brick exclusively. It is understood that the consideration for the deal was $40,000. The New Lexington Clay Products Co. recently changed ownership and has been making a variety of flash brick. C. B. Young is manager of the Ohio State Brick & Stone Co., and C. V. Trott, secretary.

Columbus manufacturers and jobbers of brick and clay products are very much interested in the announcement which appeared in the September 25 issue of *Brick and Clay Record* of the plan for immense publicity campaign adopted by the American Face Brick Association. The fact that the contract is conditional on the signing up of manufacturing interests producing 600,000,000 brick annually especially appeals to the manufacturers, making it manifest that the burden in the campaign will fall equally on all manufacturers. The new campaign is the sole subject of conversation among Columbus brick men.

Emmet Howard, sales manager of the Claycraft Brick Co., Columbus, Ohio, reports an increase in the number of inquiries for face brick, which presages a better feeling in construction circles. The plants of the company, two at Shawnee and one at Groveport, are being operated as fully as possible when labor shortage is taken into consideration. The plant at Groveport has been crippled to a certain extent because of lack of coal. The concern mines its own coal near Shawnee but cannot get it shipped to Groveport because of the order of Judge Lovett requiring that all coal be shipped to the lakes for the Northwest.

The Camp Conduit Co., Cleveland, Ohio, has placed on the market a new building tile which is rather unique in design, and has been brought out with the idea of aiding the development of low priced fireproof residences. It is 5x8x12 inches in size, and because of its special design and construction, a moisture-proof joint is made, elim-

inating the necessity of the material being stuccoed or water-proofed. The face is of rough texture. The tile will be known as the Camp Saf-Tile, and will be produced at the B plant, 48th Street and Denison Avenue. The first run out of kiln was made on September 26.

Advocates of brick for use in paving the Hamilton and Butler County stretches of the Dixie Highway in Ohio have won after a vigorous fight. Bids were advertised for the construction of the route thru Butler County, calling for concrete only. A delegation visited Columbus, representing property owners and other citizens along the route, to protest against brick being left out. State Highway Commissioner Cowen consequently rejected bids submitted under the original advertisement, and advertised for further bids, including brick as one of the materials to be used. The authorities hope to begin work on the road this fall.

Building operations in Cincinnati, Ohio, for the month of September showed the effect of the advancing season, as well as of the conservatism in financial circles due to the demands of the war for money. As compared with September, 1916, there was a distinct loss, as well as with August. In August, while there was less work passed thru the building commissioner's office than last year, there was still considerably more than in September. August, 1916, showed 1,548 permits, with estimated cost of $1,328,490, while in August of this year there were 1,085 permits issued, for work of the estimated cost of $926,795. In September only 886 permits were issued, and the work was valued at $798,915, as compared with September of last year, when 1,260 permits were issued, for work to cost $862,030. For the first nine months of the year there was also a decline, as represented by the total estimated cost of the work, which was $9,173,735 for last year and $8,249,475 for this year.

Texas

In the construction of the new high school of San Antonio, Tex., twenty-one carloads of hollow tile from the Star Clay Products Co., and twenty cars of face brick supplied by W. C. Moody were used.

Virginia

The Staunton (Va.) Brick Co. has reduced its minimum capital stock from $30,000 to $25,000.

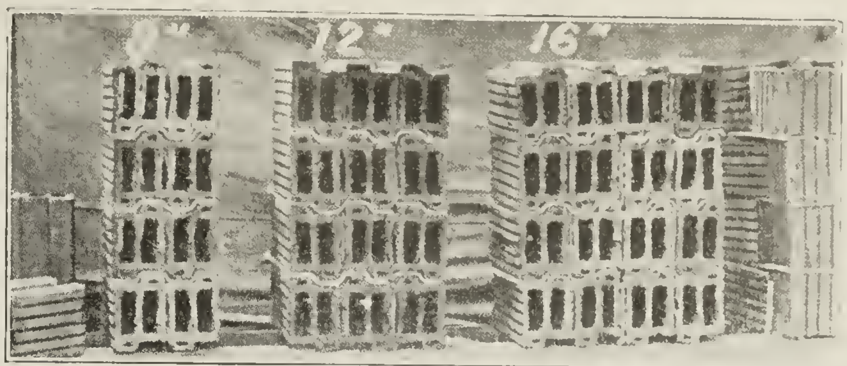
Wisconsin

The plant of the Standard Brick Co., Milwaukee, Wis., was damaged by fire on the night of September 26, suffering a large loss from flames which for a time threatened to envelope a number of buildings in the surrounding residential districts. The loss to the plant was centered chiefly in the engine room, a frame structure, and it was only by the valiant efforts of the fire department and employes that the adjoining structures of the plant were saved.

⁂

Our Fire Loss

The total fire loss of the United States for a period of forty years is equal to the amount Congress has authorized the Secretary of the Treasury to borrow for war purposes, and the loss for the year 1916 was greater than the initial issue of $200,000,000 of certificates in indebtedness. Can anything more be said regarding the importance of fire prevention? Every brick and tile manufacturer should preach the gospel of fire prevention—or safe and permanent construction.



Hollow Ware Plants

Listen: If you want a hollow tile that is easy to make, easy to dry, easy to burn, and which has already met with universal approval by both masons and buyers—

Investigate

"LOXALL"

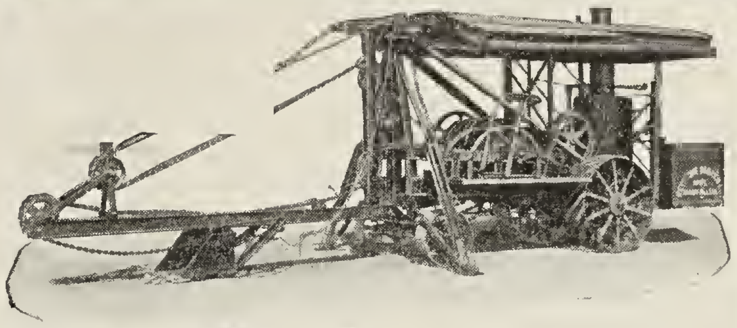
We are going to license it in every territory in the U. S. A. and your section may still be open. Get in touch with us at once.

J. E. EXNER

602 Lincoln Street COFFEYVILLE, KAN.

"LOXALL" is patented in the U. S. A. and Canada

KEYSTONE



PORTABILITY

THE KEYSTONE EXCAVATOR (MODEL 3) is a light traction shovel. It weighs ten tons, wheel-base, about ten feet. Rear wheels 55-inch in diameter with 16-inch tires. Front wheels 30 inches in diameter with 10-inch tires. It has two traction speeds and will go anywhere on its own power where you could take a loaded dump wagon.

SKIMMER BUCKET ½-YARD CAPACITY. Machine will load 250 to 500 cubic yards in ten hours, operated by two men. Replaces 25 to 50 hand shovellers, has powerful crowding thrust and will dig toughest fire clay. We will furnish names of brick manufacturers, cement plants, etc., using Keystone Shovels in pits under all conditions.

You save in first cost, up-keep, repair expense and moving cost. Get from one set-up to another in quick time. No planking necessary if ground is dry and solid.

Your Engineers agree that it is good business to install two light machines in place of one heavy unit. The explanation is **PORTABILITY!**

All operations illustrated in catalog, which will be sent on request.

KEYSTONE DRILLER CO., Beaver Falls, Pa

170 Broadway, New York City Carthage, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

SAY I SAW IT IN BRICK AND CLAY RECORD

Kissel ALL-YEAR Cab
Gives drivers full protection in Winter
Increased results for truck owners

"That is just what our drivers need this winter"

GIVING full protection in stormy or cold weather, the **ALL-YEAR Cab** increases your driver's efficiency—discourages speeding—diminishes accidents—and keeps your trucks in operation the year round, regardless of weather.

In its summer form it is a cool, open housing—in winter, the **ALL-YEAR Cab** is quickly changed into a warm, dry, closed, weather-proof Cab by adding the winter attachments.

KISSEL TRUCKS

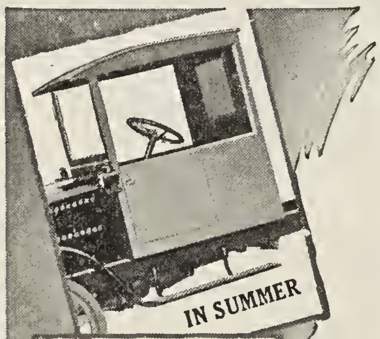
Five new sizes—a truck for every purpose.

The Kissel combination of perfected worm-drive rear axle, superior front axle, sturdy Kissel-built powerplant, double external brakes and special heat-treated frame, insures to owners in the brick and clay busniess long wear, dependable performance, economical maintenance and high tire and gasoline mileage.

Whatever size truck your business requires, you are sure to find it in the new Kissel Truck line.

See your Kissel dealer today or write us for literature on the new Kissel Trucks and the ALL-YEAR Cab.

Kissel Motor Car Company
Hartford, Wisconsin, U. S. A.



POTTERY NOTES

A Resume of the Activities of
the Potters and Some Mention
of Their Plans for the Future

RESULTS OF POTTERY CONFERENCE

While a number of propositions concerning the domestic general ware pottery scale were agreed to in joint conference of the Labor Committee of the United States Potters Association and the Conference Committee of the National Brotherhood of Operative Potters, all unsettled points were left to a referendum vote of the workers. A wage increase ranging from 12½ to 30 per cent. over that paid on the 1915 wage scale has been offered by the manufacturers in their first agreement, but the workers made a demand for an advance of 25 per cent. on top of existing wages. Within the last year the manufacturers advanced wages in many departments from 10 to 20 per cent.

The propositions agreed upon in the joint conference at Atlantic City recently, and just announced are as follows:

That 36's and smaller jugs plugged at lower part of handle shall be paid for at the stuck-on handle price.

That committees shall be appointed to endeavor to set casting prices for large jugs, ewers, etc., and for casted sugars when handles are plugged.

That no journeyman warehouseman shall be laid off to make room for a beginner.

That no workman shall be discharged or discriminated against for refusing to work on Sunday, in those departments where it is not customary to work regularly on Sundays.

Where sagger machine is installed a competent journeyman saggermaker shall be given the preference to operate such machine. All helpers on the machine shall be selected by the firm.

That where a firm requires the use of spurs in placing decorating kilns the men and the firm shall endeavor to arrive at a satisfactory price for such work. In case no agreement is reached the matter shall be referred to the standing committee for adjustment.

That during the period of the war all workmen are urged to help with the work in any department where workmen are scarce, so that everyone may be kept steadily employed, and no department thrown out of work temporarily for want of co-operation by any other department that might at that time be better supplied with help. No workman shall suffer any loss in wages as a result of his helping out in some other department.

That committees shall be appointed to endeavor to establish uniform pin saggers.

If as a result of the war there should be a shortage of labor in the pottery industry, there will be no opposition on the part of the National Brotherhood of Operative Potters, when necessity requires it, to the employment of women in any department where they are physically competent to do the work; to foreign white labor who can speak English, for the starting of extra apprentices to make up such shortage of labor.

There shall be joint committees of manufacturers and operatives appointed in the cities of East Liverpool, Sebring and Trenton, with power to adjust all questions pertaining to a shortage of labor in their districts. In case any firm is unable to secure the journeymen necessary for any department they shall make application for relief to the committee of their district, who shall investigate such claim, and upon proof that the firm has made an honest effort to secure journeymen, and in their judgment the circumstances warrant it, they may permit such firm the privilege to either start women or extra apprentices.

Where it becomes necessary to permit women to work in the place of men, they shall be paid at the journeyman rate for such work and be allowed to continue in such positions until men returning from the war are available.

Where an extra apprentice is allowed to start in any branch of the trade where it is not necessary for a journeyman to make any sacrifice in teaching him, the oldest apprentice in that branch shall be paid at the journeyman rate for the balance of his apprentice period.

When an extra apprentice is started at kiln placing the firm shall pay the journeyman rate for such apprentice: the excess between his apprentice rate and the journeyman rate shall be paid to the kiln crew during the extra apprentice's full period of apprenticeship.

BROTHERHOOD, IN REFERENDUM, REFUSES OFFERS

Within a week after the joint wage conference committee submitted a proposed wage scale to a referendum vote of the pottery workers, employed in the domestic ware branch of the trade, 75 per cent. of the trade voted, and of this vote, 83 per cent., voted to reject the offer of the manufacturers.

As soon as the executive committee of the National Brotherhood of Operative Potters canvassed this vote, the heads of the various local unions affiliated with the Brotherhood were notified to advise the members to continue at their places until October 11, 1917, only. The 1915 wage scale expired at midnight September 30.

As soon as the rejection was conveyed to the employers, a special meeting of the United States Potters' Association was called by Secretary Charles F. Goodwin, to meet at the William Penn Hotel, Pittsburgh, Pa., October 4, and this meeting continued over two days. Executives of the Brotherhood of Operative Potters were summoned, and a joint meeting was held the afternoon of October 5, at which time the manufacturers handed the Brotherhood representatives an ultimatum which is admitted to be the last word of the employers.

The manufacturers granted the workers additional concessions, and these propositions will again be submitted to a referendum vote of the pottery workers—for acceptance or rejection. Admission is made by many workers that the manufacturers have been eminently fair in their offer to the workers, and it is the belief of those who have been in close touch with the situation that the new offer of the manufacturers will be accepted by an overwhelming vote.

TEXT OF REVISED OFFERS

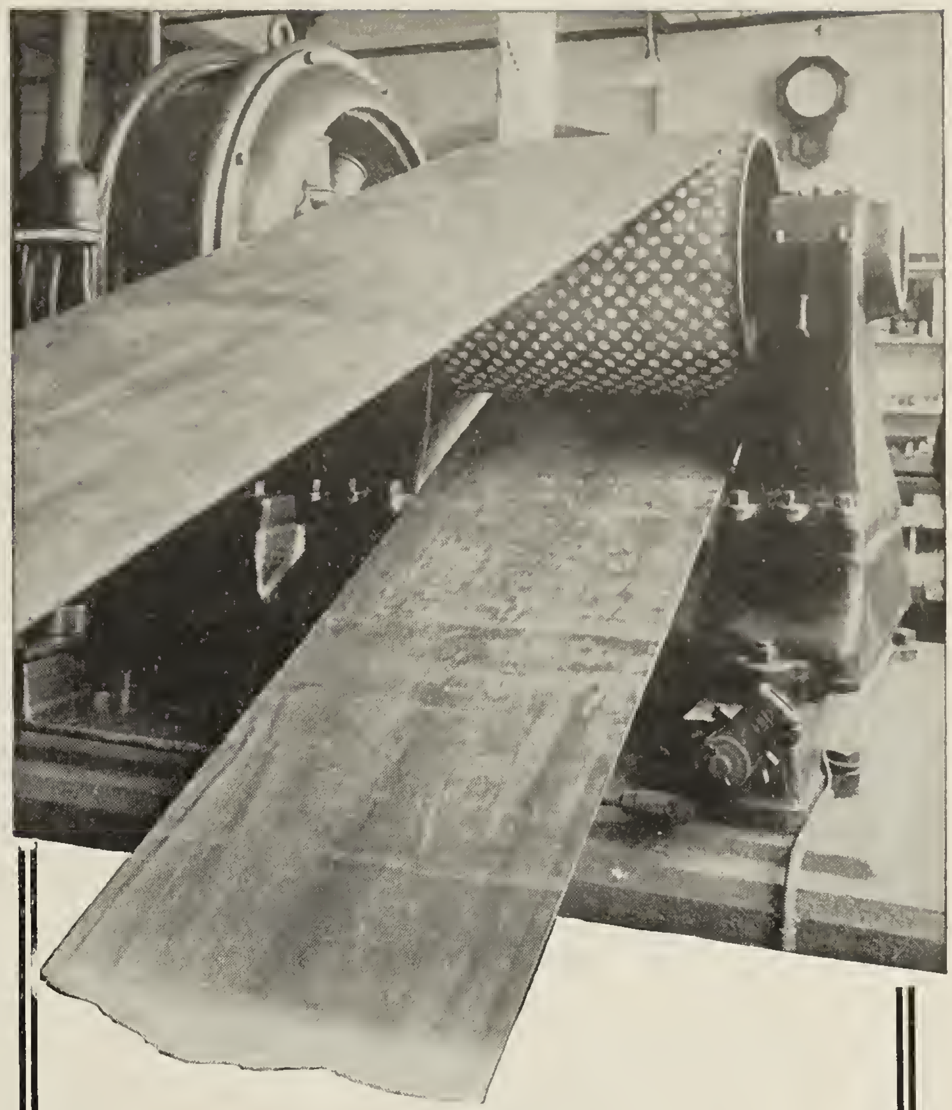
The complete text of the ultimatum of the manufacturers, which offers to increase wages over a range of from 10 to 32½ per cent. is as follows:

To the National Brotherhood of Operative Potters:

"Gentlemen:—In submitting to your representatives at Atlantic City the proposition which was later rejected by referendum vote, we aim to adjust in a measure the wage scale inequalities which have been increasing from year to year as the result of the development of new and more favorable working conditions in the more recently built plants. It was our theory that an advance in wages is warranted only by the increased cost of necessities, and that the lower paid workingmen feels the pinch of the times more acutely than men employed in more favorable positions. We therefore proposed a scale that represented as nearly as practicable the same increase in dollars and cents per week to men in all departments, rather than a uniform percentage of increase that would mean a much greater actual advance in dollars and cents in some departments than in others. This principle appears to have been dissapproved by the vote.

In the proposal to place all departments of jiggering upon a separate piece work basis, we believe we were offering a solution for many of the annoying problems that now harass that trade, and that we were suggesting a plan that would meet with the hearty approval of the jiggermen and their helpers. This proposal also appears to have met with decided disapproval.

In a general way it seems that those measures that were



"Prevent Belt Slipping"

Since July, 1911, this Cork-Insert Pulley has been in operation on a 200 K. W. generator. **In all this time the inserts have not been touched, and the people at the mill report that not the slightest bit of slip on the generator has been evidenced.**

Can you make an equally good report for the pulleys in your plant? Remember, you don't have to put up with unsatisfactory pulleys.

Cork-Insert Pulleys

specialize in overcoming difficult conditions, and produce economy of operation. Slipping—that great power waster—is absolutely prevented. They are not affected by damp or dust and will stand up under unusually heavy loads. **Just what the clay-products manufacturer needs.**

We have Cork-Insert Pulleys exactly fitted to your requirements. Write us for information about them.

The Cork Insert Company
168 Federal St. Boston, Mass.

It Takes Good Steel To Build Good Cars

—and some time ago we determined that we would give the clay products industry prompt shipment on LAKEWOOD cars at all times.

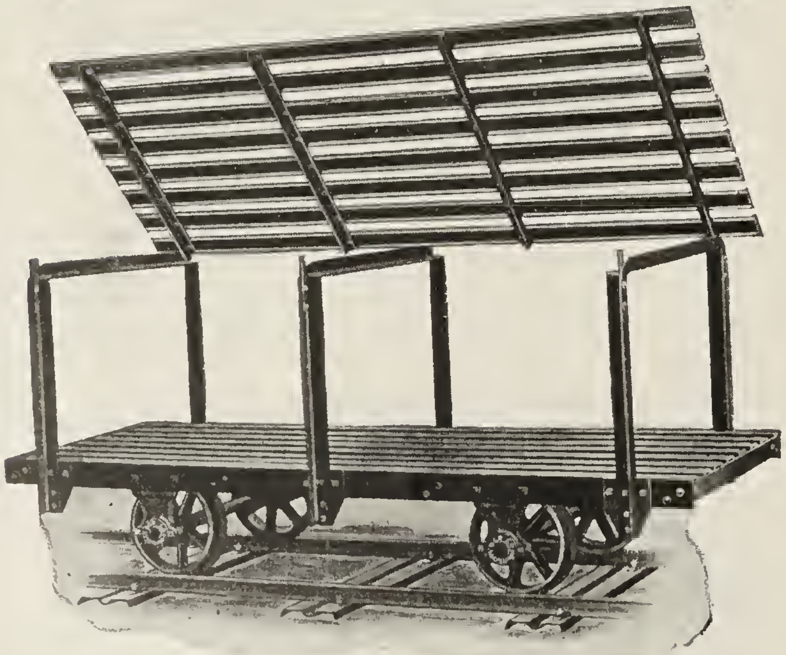
So—we laid in a big stock of high grade steel (the only kind we use) and we have also enlarged our manufacturing facilities so we can give you

Prompt Shipments on
Dryer Cars
and
V Dump Cars

This is only another instance of the practical benefit you get from LAKEWOOD SERVICE. Use our products once—entrust your orders to us—and you'll continue to

Leave It to Lakewood

The
Lakewood Engineering Co.
Cleveland, Ohio



especially designed to benefit the workingmen were the ones to which there developed the strongest opposition.

While we insist that our offer was eminently fair in principle as well as in the amount of the advance proposed, we do not feel that we are justified in submitting to a strike in the attempt to compel our people to accept against their will, a plan that was designed for their benefit. We are willing to surrender the principle of equity in order to protect all who depend upon our industry, from the inexpressible disaster of a prolonged strike.

We therefore submit for your consideration the following revised propositions, realizing that it is less scientific than the original, but probably more in line with the views of your membership.

You are advised that this is our last word in this connection. In the event of rejection the duration of the strike that will follow will depend entirely upon yourselves. We shall have nothing to offer.

Proposed Scale—Jiggermen.

Present scale, with additions noted below, plus 27½ per cent.

Add ¼-cent per dozen to present list on the following items in hotel half thick, roll edge, and welt edge. Saucers, individual butters, ice creams, cups, fruits, plates, flat and deep, all sizes.

Add ¼-cent per dozen to present list on St. Denis cups.

Add ¼-cent per dozen to present list of all fruits, ice cream, and saucers, plain and festooned, regular weight.

New List Prices on Mixing Bowls.

Mixing Bowls, 4s	32½ cents per doz.
Mixing Bowls, 6s	22½ cents per doz.
Mixing Bowls, 9s	15 cents per doz.
Mixing Bowls, 12s	12 cents per doz.
Mixing Bowls, 18s	08¾ cents per doz.
Mixing Bowls, 24s	05½ cents per doz.
Mixing Bowls, 30s	05½ cents per doz.
Mixing Bowls, 35s	05½ cents per doz.
Mixing Bowls, 42s	05½ cents per doz.

27½ per cent. to be added to above prices on mixing bowls.

In order to avoid misunderstanding, we will state this proposition in another way, viz:

We propose to take the scale of prices for jiggered ware under which we are now working and have been working during recent months and add to it the several increases listed above, and at the foot of pay slip or pay card add 27½ per cent. instead of the 15 per cent. now being added.

We may take for illustration the item of saucers:

The present price of saucers is .03¼ per dozen, plus 15 per cent.

The proposed price of saucers is .03½ per dozen; plus 27½ per cent.

Jiggermen are to hire and pay their helpers as they are now doing, and shall grant to their helpers an increase in pay corresponding to the increase percentage they themselves receive.

The bonus to batters out and mold runners is to be continued. Jiggermen working with less than their regular crews shall receive 25 cents bonus for each helper absent.

In other departments we propose to pay the additions to the 1915 scale as indicated below. By the 1915 scale we refer to the one contemplated by the original Chalfonte agreement:

Turners	1915 scale plus 22½%
Handlers	1915 scale plus 22½%
Casters	1915 scale plus 22½%
Dishmakers	1915 scale plus 27½%
Pressers	1915 scale plus 30 %
Stickers-up	1915 scale plus 30 %
Mold makers, piece work	1915 list plus 10 %
Dippers	1915 scale plus 22½%
Packers	1915 scale plus 32½%
Glost and bisque kilnmen	1915 scale plus 30 %
Bench bosses	1915 scale plus 30 %
Sagger makers, free and clay	1916 scale plus 17½%
Slip makers	1915 scale plus 27½%

Apprentice Kilnmen.

First three months, per day	$2.90
Second three months, per kiln day	1.90
Second six months, per kiln day	2.00
Second year, per kiln day	2.10

Third year, per kiln day	2.25
Glost drawers (women), per kiln	1.45
Bisque drawers (women), per kiln	1.50
Glost dressers, per day	1.70
Bisque brushers, per day	1.75
Dippers (women), per day	1.80
Stampers (women), per day	1.75

Warehousemen Proposed New Scale.

First year	$2.20 to $2.75	per day of 9 hours
Second year	3.12½	per day of 9 hours
Third year	3.30	per day of 9 hours
After third year	3.75	per day of 9 hours

Decorating Kilnmen.

Since conditions under which decorating kilnmen are employed are uniform, each firm shall grant an advance of 11 per cent. on present wages:

Kiln Drawers—Men.

Glost	56 cents per 100 cubic feet
Bisque	52 cents per 100 cubic feet

For drawing bisque kilns 75 cents will be paid for each extra day allowed bisque kilnmen for placing excess flat.

We further propose that the agreement already reached in conference on certain propositions of yours and ours shall stand, and that all propositions, on both sides upon which no agreement has already been reached, shall be dropped.

It is our understanding that all advances made over the 1915 scale are granted to assist in meeting war conditions and that a return to normal in national affairs will warrant a readjustment of wages accordingly.

Respectfully submitted, United States Potters Association,
Charles C. Ashbaugh, president.
Charles F. Goodwin, secretary.

NEW TYPE OF KILN CONSTRUCTED

A down draft bisque kiln, patented by George Latinski, a Russian, and the first kiln of its kind to be constructed in the United States, is now in use at the plant of the Knowles, Taylor & Knowles Pottery Co,. in East Liverpool, Ohio. The patent, it is said, promises to revolutionize kiln construction in the future owing to the fact that it uses from 35 to 40 per cent. less fuel; allows room for 420 more saggers than the ordinary kiln; reduces breakage, and requires 12 hours less for the firing.

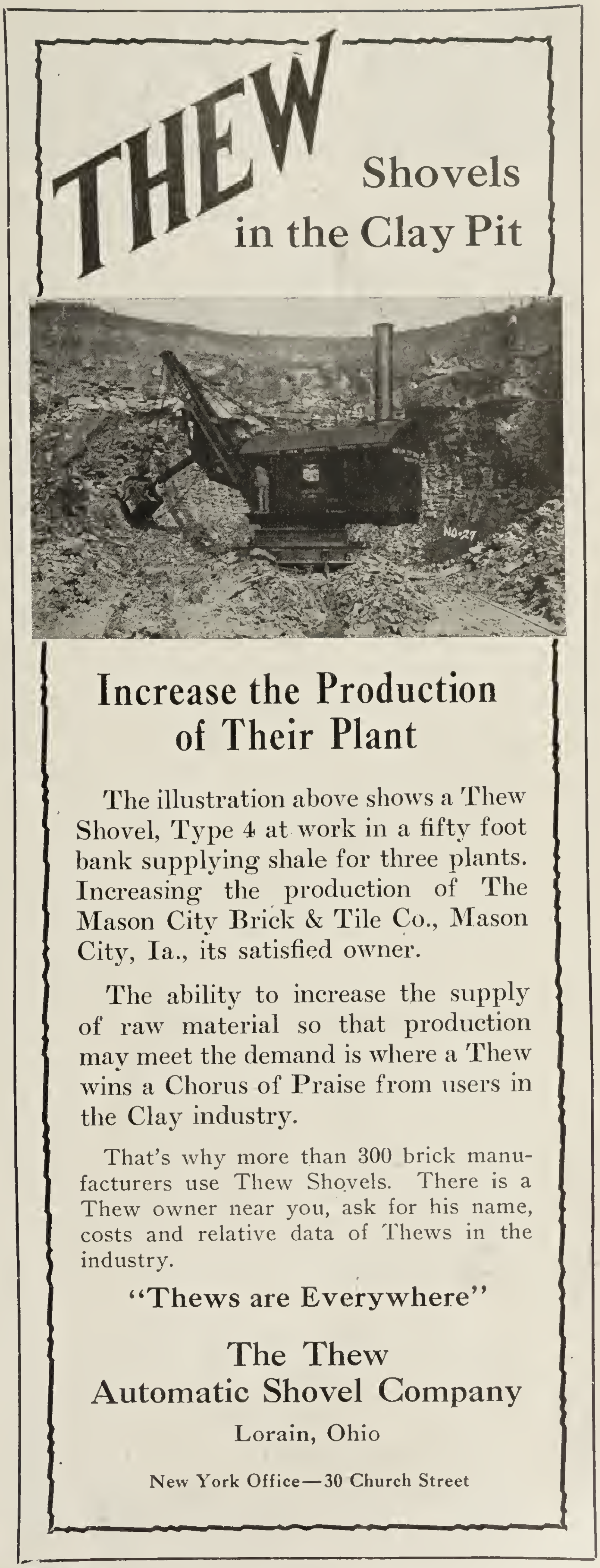
John R. McDonald, secretary of the Knowles, Taylor & Knowles Pottery Co., declares the kiln has been fired with success, and that it had far exceeded expectations.

Mr. Latinski came to East Liverpool, direct from Slawuta, Russia, fifteen months ago, and endeavored to interest the United States Potters' Association in the construction of several of the new kilns. There were those who were skeptical and stated that the kind of kiln he proposed would not be practical.

He succeeded in interesting the officials of the Knowles, Taylor & Knowles Co. in the erection of an experimental kiln, along the lines he proposed. The principal difference between the old-time kiln, in general use, and the new kiln is that the latter has no bags on the inside of the kilns. In the new kiln the bags thru which the heat pours, are built into the wall of the kiln. The heat ascends to the top of the kiln. There is no outlet for it here as in the old kiln, and the heat is drawn back down thru the kiln floor.

It is said that much less coal is required to fire the new kiln than is required in one of the old kilns. The kiln is cooled with hot air instead of cold, making less breakage in saggers. Where more than 100 saggers were broken in the old kiln but 50 are broken in the new. Owing to the same cooling process, there is less doubled ware. The new kiln requires 42 hours for firing, as compared to 54 hours for the old kiln.

Water is used beneath the kiln for the cooling of the


THEW Shovels in the Clay Pit

Increase the Production of Their Plant

The illustration above shows a Thew Shovel, Type 4 at work in a fifty foot bank supplying shale for three plants. Increasing the production of The Mason City Brick & Tile Co., Mason City, Ia., its satisfied owner.

The ability to increase the supply of raw material so that production may meet the demand is where a Thew wins a Chorus of Praise from users in the Clay industry.

That's why more than 300 brick manufacturers use Thew Shovels. There is a Thew owner near you, ask for his name, costs and relative data of Thews in the industry.

"Thews are Everywhere"

The Thew Automatic Shovel Company
Lorain, Ohio

New York Office—30 Church Street

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.20
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.50
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scumming and Efflorescence	.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, **Book Department,**

Brick and Clay Record
445 Plymouth Court, Chicago, Ill.

grate box, and at the same time to supply steam, which causes a better fire. One of the most important features of the new kiln is the elimination of the inside bags. This permits the men to place 420 more saggers in the kiln than can at present be placed in the old one.

⁂

At the plant of the Thomas Maddock's Sons Co., pottery manufacturers of Trenton, N. J., a farewell party was given to thirteen employes conscripted for service in the National army, among them being Harold S. Maddock, vice-president of the concern. About four hundred of the Maddock employes gathered in the men's club room to pay tribute to the drafted men. The club room was decorated with flags of the allied countries and there was a profusion of cut flowers in the room. During the course of the evening A. M. Maddock presented to each one of the conscripts a wrist watch and comfort kit and other articles of necessity.

Peter Bloss, one of the oldest pottery molders in Central New York, died at Syracuse, N. Y., recently at the age of fifty-eight. Mr. Bloss has been engaged in the pottery industry for more than forty years and for the greater part of that time was in charge of the molding departments of the Onondaga Pottery Co.

⁂

BRICK PAVEMENTS *in* PENNSYLVANIA

THE CONSTANTLY GROWING USE of brick paving in different sections of the country indicates the value now placed on this type of pavement for utmost utility and service. The qualities of the brick highway have become generally recognized both for city and rural purposes, with features of particular merit to recommend it where a permanent, reliable surfacing at moderate cost is desired. Brick gives a smooth surface pavement that is clean, free from mud and dirt, and practically dustless; which has the ability to withstand excessive traffic conditions and which affords a length of service only dependent upon the factors governing initial installation.

Extensive investigations of paving operations have recently been made in Pennsylvania under the direction of the Division of Municipal Statistics and the results of this work attest to the importance placed on brick surfacing thruout this district. This research covered all types of improved paving in different cities of over 8,000 population and was conducted to provide an intelligent and accurate basis for suitable recommendations for street improvements in other municipalities.

A total of twenty-seven typical Pennsylvania cities was selected for this work, with a total of close to 268 miles of paved thorofares, and combined population of 400,000. Of this aggregate mileage, 250 miles, or practically ninety-four per cent. were found to be of brick, with the balance of eighteen miles divided into seven miles of asphalt and asphaltic-macadem, six miles of amiesite, and five miles of wood block. These figures show conclusively the recognition given to brick pavements thru the service to be derived.

It is interesting to note for purposes of comparison the enterprise and progressiveness of some of the smaller boroughs in the improvement of local streets. For instance, the town of Butler, with population of 20,728, has thirty-five miles of paved highways, with brick the predominating type. On the other hand, larger communities, such as Shenandoah, will be found with but a mile or two of improved streets. Important features of the research also included the proportion of cost of paving defrayed by the municipality and the prices of the different materials, the latter being a general average during the most active period of street surfacing. The accompanying data present an interesting and instructive digest covering these and other primary factors of brick and prepared paving in the various cities, showing in a striking manner the exceptional popularity of brick for highway service in the different counties of the state.

BRICK—PRINCIPAL TYPE

Butler, population 20,728, has 35 miles of paving, or 616,000 square yards. The city defrays one-third of the cost. Brick, $1.95 per square yard, including concrete base and grout filler.

Carlisle, population 10,300, has 2 miles of paving, or 42,934 square yards. The city defrays one-third of the cost. Brick, $1.87 per square yard, including concrete base.

Carnegie, population 10,000, has 11 miles of paving, or 135,500 square yards. The city defrays one-third of the cost. Brick, $1.55 per square yard, with slag bed, and $2.10 with concrete base.

Chambersburg, population 11,800, has 1 mile of paving. City defrays one-third of cost. Brick, $2.19 per square yard, including concrete base.

Farrell, population 10,200, has 3½ miles of paving, or 62,300 square yards. The city defrays one-third of the cost. Brick, $1.56 per square yard, with city handling the work.

Greensburg, population 13,000, has 21 miles of paving. City defrays one-third of cost. Brick, $1.39 per square yard.

Homestead, population 18,700, has 16 miles of paving, or 292,800 square yards. City defrays one-third of the cost. Brick, $1.99 per square yard.

Lansford, population 8,300, has 2½ miles of paving, or 58,550 square yards. City defrays one-third of cost. Brick, $2.51 per square yard.

McKees Rocks, population 14,700, has 12 miles of paving, or 181,800 square yards. City defrays from one-third to one-half the cost. Brick, $1.78 to $1.95 per square yard on 6-inch concrete grout filler.

Mount Carmel, population 17,500, has 3.2 miles of paving, or 75,850 square yards. City defrays one-third of cost. Brick, $2.28 per square yard.

Nanticoke, population 18,900, has 4.7 miles of paving, or 66,000 square yards. City defrays one-third of cost. Brick, $2.32 per square yard.

New Brighton, population 8,400, has 9 miles of paving, or 200,000 square yards. City defrays one-third of cost. Brick, $1.67 per square yard.

Norristown, population 27,900, has 14¼ miles of paving, or 258,600 square yards. City defrays entire cost. Brick, $2.08 per square yard.

North Braddock, population 11,900, has 17 miles of paving, or 250,000 square yards. City defrays one-third of cost. Brick, $2.38 per square yard.

"On-the-Job" GANDY sings—
"You keep the home fires burning,
I'll keep the wheels a-turning,
And Victory is assured!"

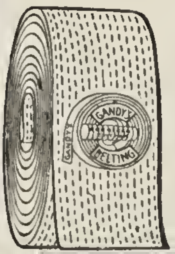
"YOU captains of industry keep the home fires burning in plant, mill and mine, and leave it to me—the world's champion power and material conveyor—the original stitched cotton duck belt—to keep the wheels a-turning with a 100% production hum.

"I'm built for the job. My sinews are tough and strong. My wonderful endurance and ability to get ***all the pull from the pulley*** year in and year out in sun and rain, live steam, acid fumes and dust, make me your one best cooperator.

"Don't forget that preparedness is vital to success. Traffic conditions are not improving, so get in touch with me now for quick delivery of your belting requirements.

"Look for my painted green edge and well known GANDY trade mark to be sure you're getting the one and only GANDY stitched Cotton Duck belt.

"Order me from your mill supply house—or



THE GANDY BELTING COMPANY
732 W. Pratt St. Baltimore, Maryland
New York Branch: 36 Warren Street

The "B-G"
Portable Belt Conveyor
Eliminates Your Worst Labor Problem

With this light, practical conveyor you can reduce your handling charges at many points. The conveyor can be moved easily on its own trucks or on an overhead track, in a shed or in the open.

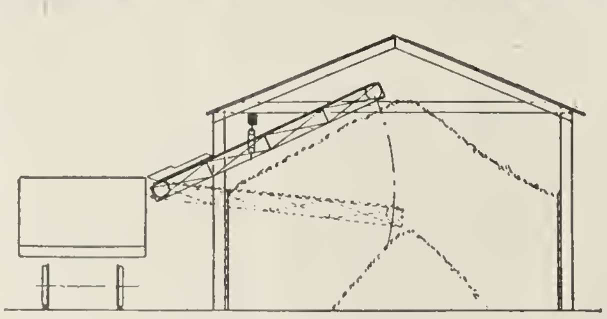
It handles **coal, clay** and **brick.** It will operate level or on an incline. It eliminates the wheel barrow and all rehandling and thereby **cuts the labor costs in two.**

Driven by electric motor within the frame. Eighteen-inch belt. Made in 12, 15, 20 and 25 foot standard lengths or in special lengths to suit conditions.

In writing for price, state length of conveyor required and voltage, phase, and cycle of your current.

Barber-Greene Company
Aurora, Illinois

532 Acklin Ave., Toledo, Ohio.
Maurice J. Watson Co., Newtonville, Mass.
Lucke Sales & Engineering Co., Minneapolis, Minn.
Machinery Rental & Sales Co., Kansas City, Mo.
Mussens Limited, Montreal, Canada.



For inside use in any type of shed piling coal or reclaiming clay.

Phoenixville, population 10,750, has 2¾ miles of paving, or 92,400 square yards. City defrays entire cost. Brick, $1.98 per square yard.

Punxsutawney, population 9,100, has 6¾ miles of paving, or 100,400 square yards. City defrays one-third of cost. Brick, $1.71 per square yard.

Shamokin, population 19,600, has 8 miles of paving. City defrays one-third of cost. Brick, $2.03 per square yard.

Sunbury, population 13,800, has 6 miles of paving, or 100,000 square yards. City defrays one-third of cost. Brick, $1.97 and $2.14 per square yard, with asphalt filler.

Warren, population 11,200, has 9½ miles of paving. City defrays one-third of cost. Brick, $2.75 per square yard.

Washington, population, 18,800, has 32 miles of paving, or 325,650 square yards. City defrays entire cost. Brick, $1.55 per square yard.

Wilkinsburg, population 19,000, has 27¾ miles of paving, or 416,550 square yards. City defrays one-third of cost. Brick, $2.00 per square yard.

Oliphant, population, 8,500, has 4½ miles of paving, or 73,920 square yards. City defrays one-third of cost. Brick, $2.38 per square yard.

ASPHALT, AMIESITE, MACADAM, AND WOOD BLOCK

Bethlehem, population 12,900, has 2 miles of paving, or 32,000 square yards, using amiesite as the principal type. City defrays one-third of cost.

Columbia, population 11,500, has 5 miles of paving, or 100,000 square yards, using asphaltic macadam as the principal type. City defrays one-third of cost.

Shenandoah, population 25,800, has 2 miles of paving, or 38,800 square yards, using asphalt as the principal type. City defrays entire cost. Sheet asphalt, $1.95 per square yard.

South Bethlehem, population 20,000, has 5 miles of paving, or 104,500 square yards, using amiesite as the principal type. City defrays entire cost. Amiesite, $1.59 per square yard.

Steelton, population 14,500, has 5 miles of paving, or 88,900 square yards, using wood block as the principal type. City defrays one-third of cost.

⁂

China Clays at Chemical Exposition

Clay and clay products were conspicuous at the third annual Chemical Exposition at the Grand Central Palace, New York, held during the last week in September. Most of the clay products exhibited were for chemical work and nearly all were of a heavy character. Laboratory porcelain and table ware were among the more delicate exhibits.

The striking feature of the exhibits was the specimens of kaolin which came from a number of places in the South. Knoxville, Tenn., had a large exhibit and among them was kaolin, claimed to equal anything found abroad. This contention was supported by a plentiful exhibit of pottery made from these clays, which do not suffer by comparison with anything produced abroad, supposed to be of the same grade And the exhibitors said that the supply was inexhaustible.

C. H. Zeiger, representing the Miner-Edgar Co., Brooklyn, N. Y., was showing some clays mined along the line of the Central of Georgia railroad which were so fine that to the touch they strongly resembled talcum powder. In talking of the deposits he said:

"The quantity available is beyond estimate. No one knows for a certainty how extensive the deposits are along this road, but those which have been opened are so large that it will require years to make any impression upon them.

"These clays are used for paper fillers and for other similar work which requires the finest quality obtainable. Recent laboratory tests show that the quantity of these clays required to fill a certain proportion of pulp is much less than the foreign clays, nor do they need either alum or sizing to insure using only small quantities.

"As the demand for such clays has increased since the war cut off imports we have developed our properties to such an extent that we are now in position to satisfy almost any requirement."

Exhibits by the Southern Railway Co. showed clays from North and South Carolina, Georgia, Alabama, and Florida. Development of these clays, the representatives of the railway point out, will make us independent of the foreign producer. They can be used for anything that these fine grades of clays are generally used for and the market is ample to encourage liberal development. Within a few years the quantity of clay which comes from now undeveloped mines will enable their owners to ship to Europe should they be wanted.

The Mandle Clay Mining Co., of St. Louis, showed a dinner set made from Tennessee ball clays which was very handsome. The glazing was perfect and the coloring and decoration was as even as it is on the best imported pottery of the same grade. Pieces left unglazed were perfectly smooth and represented excellent work.

It would appear that clay users need no longer go abroad for raw material. Indeed, it was said that since the war forced American manufacturers to look at home, the development of these clay properties has gone on faster than ever before. A brilliant future is predicted for all of them. Exhibitors included the company just mentioned, The Harris Clay Corporation, Dillsboro, N. C.; the Southern Potteries Company, Erwin, Tenn.; W. T. Harris, Jellicoe Junction, Tenn., and Peter Zechini, Newcomb, Tenn.

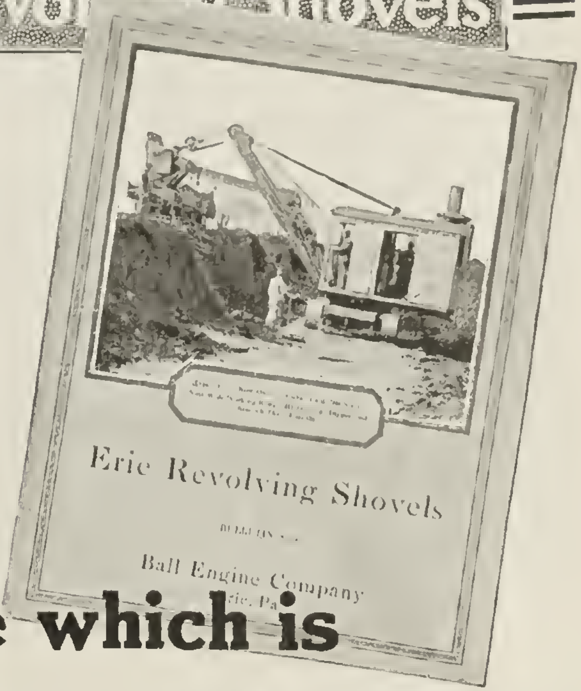
* * *

Building Conditions in New Jersey

Building conditions in and about Paterson, N. J., are somewhat better now than they have been for the last few months, but they are by no means up to their record of a year ago. The number of new buildings is far below last September, and what is even more discouraging architects have almost nothing on the boards. Inquiries now and then indicate that intending builders are still thinking of what they hope to do, but as long as conditions are unchanged they are not ready to begin operations.

Two main causes contribute to this dullness. The first is unquestionably the caution which every man feels who has money. While the country is doing more business than ever before, and every available square foot of space in this city and vicinity is occupied, and profitably, too, no one feels like undertaking further development until they see more definitely what the war will bring. Caution is the principal retarding influence.

The next is the high cost of building material bug-a-boo, which has created a psychological panic among prospective builders. Paterson has one very good opportunity for development; a number of large mills have been erected in a locality very sparsely built up. Under ordinary conditions investors would seize upon an opportunity of that sort to put up dwellings for the new workers, but one of the mills is nearly finished and the other is closed in, and not a new house is projected there. No one can say where the new



Erie Revol Shovels

Erie Revolving Shovels

Ball Engine Company
Erie, Pa.

It will help you to decide which is the best revolving shovel

In a clear and reasonable way, this Bulletin tells what has made the Erie the SPEEDIEST shovel —it explains the automatic three-lever control.

It shows how the Erie's long reach saves time on every digging and loading service.

It describes the Erie Shovel's powerful construction—stronger than other ¾-yard shovels in every detail. A standard of construction that has produced new records for *low repair cost*—in brickyards all over the country.

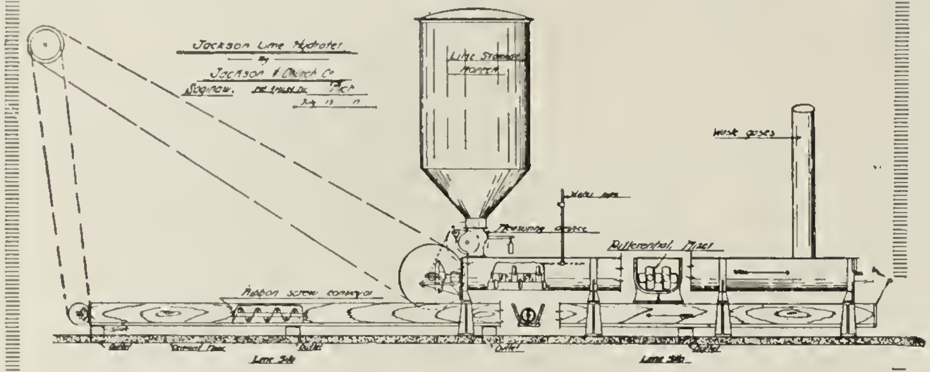
Here is the complete story of the shovel that is built *better*, through and through.

Nearly 400 owners are saying: "The Erie is by far the best revolving shovel on the market!"

If you are ever going to buy a shovel, you will find this Bulletin mighty interesting reading. We will be glad to send you a copy. Just write for Bulletin "B."

Ball Engine Co., Erie, Pa.

Improved Lime Hydrator

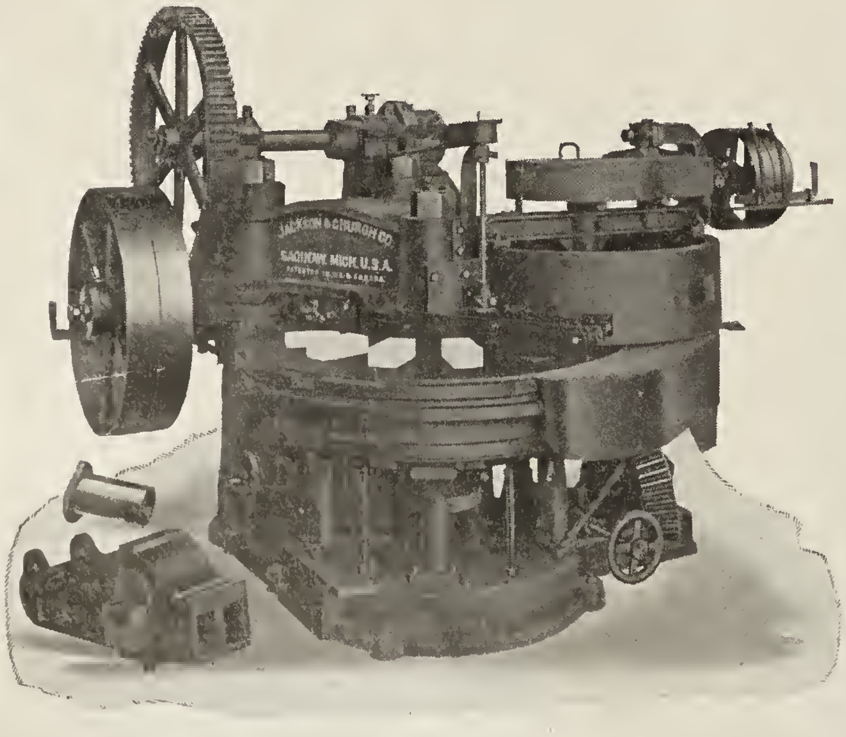


In the manufacture of Sand Lime Brick it is best to hydrate the lime on the premises. Our hydrator will do this better and cheaper than any machine in use and is not expensive to install. You can get full information by writing to

Jackson & Church Co.
SAGINAW, MICH.

Builders of a Complete Line of

Sand Lime Brick Machinery, Boilers, Tanks, Structural Iron, Castings, etc.



employes are to live, but apparently they will have to camp in tents, as they have in some other cities near here, while houses are in process of erection. It is indicative of the state of mind in which investors and builders find themselves. Heretofore, sufficient money would be easily forthcoming for any operation required under ordinary conditions, but now investors in this sort of property remain perfectly indifferent to the opportunities which are presented to them. When asked what will be the outcome, experienced men say they do not know, but they are hoping for better things in the near future.

* * *

Historic Highway Being Paved With Brick

Will P. Blair, secretary, and Maurice B. Greenough, chief engineer, of the National Paving Brick Manufacturers' Association, recently made a trip of inspection over the seventy-mile paving project now being undertaken on the old National Pike in Belmont, Guernsey, and Muskingum counties, Ohio. The section of the old highway to be paved with brick is that from Wheeling, W. Va., to Zanesville, O. The entire twenty-eight miles thru Belmont County is now finished and open for traffic as well as fifteen miles, or one-half of the road thru Guernsey County. Muskingum County is now making arrangements to complete the brick pavement as far as Zanesville, its principal city. Mr. Blair reports that the work is being delayed owing to the inability of the contractors to secure the needed labor. The completed work was found to be in excellent condition.

The National Pike is well known as the first paved road in the country, having been undertaken by the United States government in the early part of the nineteenth century, before railroads were dreamed of as means of overland traffic. The road was completed from Baltimore and Washington as far west as Richmond, Ind., and was the principal avenue of traffic over the Allegheny Mountains until superseded by the railroads.

The early government engineers were thoro road builders, starting from two to three feet beneath the surface to build their substructure. This substructure, still intact along a great portion of the way, consisted of large stones. These were surmounted by smaller and smaller units, the surface consisting of a well packed dust, similar to the macadam roads of a later period. In this particular the process of the ancient Roman road builders was reversed. They started about three feet beneath the surface, using first sand and then larger and larger units, the surface being constructed of large slabs of stone.

Altho examples of both kinds of roads survive to the present day neither have been found practicable for modern automobile traffic. The stone roads cannot be kept smooth, and the well known criticism of the macadam and similar roads is that the dust is swirled out of the crevices by the fast modern motor and the substructure is undermined and deteriorated by the elements.

The Philadelphia Public Ledger Says:

The increased cost of building materials has interrupted the construction of speculative houses to the extent that the supply of well-designed new houses offered for sale seems to be entirely out of proportion to the demand. Based on the supposition that the desire to "own your own home" is just as great as ever—and money is no scarcer than a few years ago—it seems logical that the right type of a house would find a ready market.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

The "Proctor" Dryer

In a new book just issued by The Philadelphia Textile Machinery Company, of Philadelphia, the latest achievements of the "Proctor" dryer are described and many photographic views are shown.

It is primarily a dryer for high grade plants and wonderful results have been obtained by those modern concerns that have made "Proctor" installations. These results have been secured by incorporating in the dryer many new features. By this is meant that there is no one thing in the "Proctor" dryer which you can point to and say "There is the secret of its success in rapid and uniform drying."

The ability of this drying machine to dry ware quickly, safely and cheaply is explained partially by a diagnosis of the five paragraphs below.

1. All sides of every piece of ware are given the same treatment. In order to do this the fans blow the air first from one side, then from the other.
2. The air circulation is so arranged and designed that all pieces of ware on a car receive the same treatment.
3. The dryer is made up of a number of compartments in each of which the correct temperature is maintained absolutely, and in which the air contains just the right amount of moisture for that particular stage of the drying. Each compartment has its own circulation of air which is independent of the air circulation in the other compartments. Control of this kind is absolutely necessary to uniform and rapid drying.
4. A mechanical device for moving the cars through the various compartments, and the correct determination of the length of each compartment, insure the proper treatment of the ware so that absolute uniformity is attained.
5. Rapid drying is secured because with the above control of all conditions surrounding the ware, they are able to use a higher temperature and a greater movement of air than is possible in a system of drying in which there is a fluctuation or variation in these elements.

This treatise on a modern drying machine may be obtained by addressing the company in Philadelphia.

⁂

The Haigh—A Continuous Kiln

Craftsmanship is that quality which distinguishes a few of us from the most of us, or—a few things from most things.

"Proctor" DRYERS for CLAY PRODUCTS

New "Proctor" Catalog Issued by the Philadelphia Textile Machinery Co.

At less Expense

The Buckeye Digger

gives you more clay which is perfectly mixed and it uses less men.

This is certainly your ideal of satisfactory Pit service.

With a machine that costs about one-half that of other power excavators, you dispense with the large pit gang, yet do more and better work.

More Clay, Perfectly Mixed, with less Men, at less Expense.

Send us your conditions and we will send to you an unprejudiced report.

The
Buckeye Traction
Ditcher Company
Findlay, Ohio

Your Coal Troubles Are Not Over

The tentative prices made by the government do not insure against shortage next winter.

You will have difficulty in securing the coal necessary to the operation of your plant.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.

NEW YORK PHILADELPHIA PITTSBURGH

The Haigh instruction book, under a new "craft" cover, tells a complete photographic, prose story of modern kiln building—which is an example of craftsmanship because it saves coal, and time, and labor.

CAMERA CONSTRUCTION
THE HAIGH KILN BUILT BY PHOTOGRAPHS
PROGRESSIVE PHOTOS SHOWING EVERY DETAIL OF BUILDING A HAIGH CONTINUOUS KILN
The World's Most Economical Kiln for Clay Products

Building the Haigh Kiln Told in Pictures

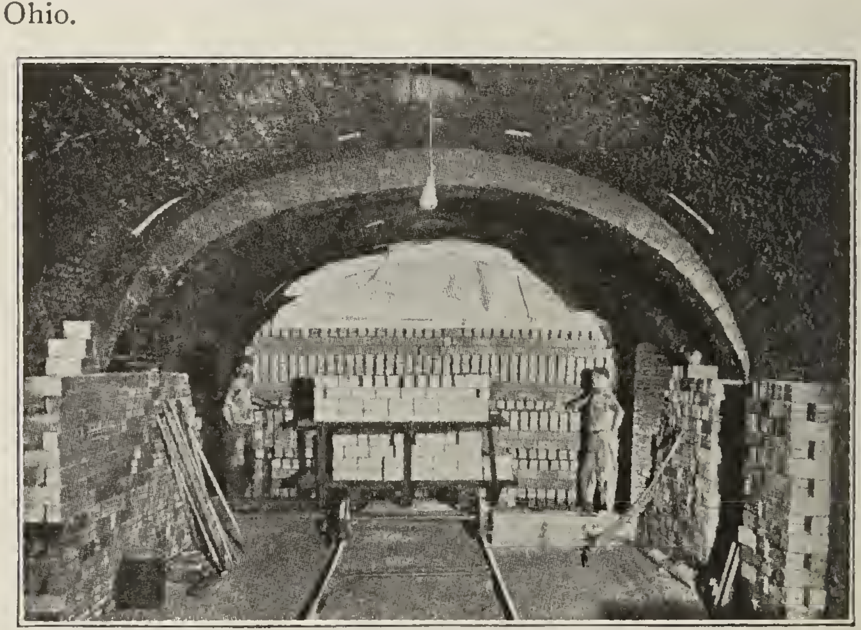
A Haigh Semi-Continuous Kiln was built at Corning, Ohio, for the Lincoln Paving Block Company, and as the work progressed, photographs were taken at regular intervals which showed every detail of construction.

In the "craft" instruction book, these photographs have been assembled in chronological order, and each one is analyzed and explained in such a clear concise manner that you will almost know "just how it works" when thru reading.

A few of the good points which are explained completely and in detail follow, and these show the scope of the work.

1. Perfect control of draft.
2. Uniform products obtained due to having uniform temperature throughout each chamber.
3. It can be installed to suit any location.
4. No disadvantage occurs by conflict of setters and unloaders, as the unburned wares enter at one side of the kiln and the burned wares are removed at the opposite side.
5. The advantage of being able to use coal, oil, wood, natural or producer gas for fuel.
6. The utilization of waste heat for drying purposes, which is successfully used on a large number of plants.
7. A small section can be built and added to at any time without any additional expense, excepting that of building the other addition.
8. The advantage of being able to burn all classes of clay wares, including paving block, building block, hollow ware, fire brick, etc. without any change in the kiln being required.

If you are interested, the book may be obtained by addressing the American Clay Machinery Company, Bucyrus, Ohio.



Interior of Haigh Kiln Showing Setting

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other Tuesday by

Kenfield-Leach Company
445 Plymouth Court Chicago

Chicago, October 23, 1917
Vol. 51 No. 9

Leading Articles in This Issue

War's Effect on Brick in Europe....756
Prepare Now!....761
Using Instruments in Dryer Regulation....764
Hollow Tile Walls of the Ancients..769
Modern Clay Testing....771
Knocking vs. Boosting....775
Rate Fundamentals and Tariff Interpretations....776

* * *

The Editor's Corner....754

* * *

Special Departments

Machinery and Equipment....797
Pottery Notes....794
Questions and Answers....782
The Superintendent....778
Wake of the News....784

American Clay Machinery Company....801, 803
American Pulverizer Co..810

Baird Mach. & Mfg. Co....787
Ball Engine Co....749
Barber-Greene Co....752
Beighlee Electric Co....790
Bell Locomotive Works....794
Black Diamond....800
Bonnot Co....740
Bristol Co....789
Broderick & Bascom....783
Brown Instrument Co....795

Canton Grate Co....791
Celite Products Co....782
Chambers Bros Co....743
Chase Fdry. & Mfg. Co....809
Clarage Fan Co....780
Cleveland Alloys Co....805
Classified Ads....817, 818
Cling-Surface Co....797
Cork Insert Co....780
Crescent Belt Fastener....781
Crimora Manganese Co....781
Cyclone Grate-Bar Co....788

Didier-March Co....812

Eagle Iron Works....782
Elwell-Parker Electric....785
Englehard, Chas....747
Exner, J. E....793

Fate Co....819

Gandy Belting Co....799
Garnet Company....805
General Electric Co....751
General Store....805
Goodrich Co....780

Hardinge Bros., Inc....781
Harris Bros. Co....817
Hendrick Mfg. Co....809
Hettrick Mfg. Co....794
Homestead Valve Mfg. Co....784

Illinois Boiler Cleaning Compound Co....805
International Clay Machinery Co....744-745
Jackson & Church Co....796

K-B Pulverizer Co....783
Keystone Driller Co....Front Cover

Lakewood Eng. Co....815
Link-Belt Company....750

Main Belting Co....741
Manufacturers Eq. Co....742
Marion M. Fd. & S. Co..782
Marion Steam Shovel Co..789
Marsh & Co., Geo. C....818
Martinique Hotel....784
Mathews Gravity Carrier..811
Morgan Co., F. W....780

Ohio Filler & Shield Co....784
Ohio Galv. & Mfg. Co....810
Orenstein-Arthur Koppel Co....813
Osgood Co....809
Owens Continuous Tunnel Kiln Co....805

Philadelphia Textile Machinery Co....746
Potts & Co....780
Price Electric Co....786

Quaker City Rubber Co....813

Roessler & Hasslacher....786
Rollin Chemical Co....787

Sander Instrument Co....783
Sanderson-Cyclone Drill....781
Sauerman Bros....780
Sawyer Belting Co....811
Scandinavia Belting Co....792
Schofield-Burkett Cons....812
Sero Specialty Co....783
Service Motor Truck Co..748
Smith Co., Claude....739
Standard Dry Kiln Co....790
Sturtevant Mill Co....820
Stupakoff Laboratories....782

Taylor Instrument Companies....793
Thew Auto Shovel Co....814
Thwing Instrument Co....788
Trautwein Dryer & Engineering Co....739

Union Chain & Mfg. Co....780

Victor Balata & Textile Belting Co....809

Watt Mining Car Wheel....785
Webner, F. E....805
Weller Mfg. Co....738
Westinghouse El. & Mfg..815
Wood & Co., R. D....798

Youngstown Steel Car....791

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

A Glimpse of the Clayworking Situation Over the Seas.

ON THE FOLLOWING PAGES is printed a very interesting article entitled "The War's Effect on Brick in Europe." When you read this story you will not be impressed with the industry's prosperity, which is a conspicuous absentee in the various neutral and belligerent countries from which reports are given. If this is what we in America are coming to, now that we are in the war, surely the future is not very bright, but—

J. S. McCannell, president of the Milton Press Brick Co., Ltd., Toronto, Ont., whose country has felt the pinch of the conflict as sharply perhaps as many in Europe, particularly in a business sense, comes to the rescue and chases the glooms with a big stick when he says:

"We do not believe that your country (that is, United States), will be affected to anything near the extent we have suffered. Your country is too large and money is too plentiful to have anything like the slump experienced in Canada."

Get what you can from the article on the following pages and as a wise man assimilate the facts given as an addition to your fund of information, but do not get the impression that American clayworking industries are going to follow the same road as those in the European countries mentioned. We do not believe they are.

It must be remembered that most of these people got into the war at the very beginning and their finances have been literally "shot to pieces." In addition to this we must not forget that American architecture differs vastly from European type and requires a larger variety of clay wares of better quality.

The nation is underbuilt. The people need houses and they are going to get them, especially inasmuch as they have money to spend. There was never so much money in circulation as at the present time and when the effect of the government's huge program for war expenditures is felt we predict that the manufacturer of structural clay products will be well satisfied with the business that will develop at that time.

* * *

Another Sign of Renewed Activity

MANUFACTURING ACTIVITY in New York State, according to the State Industrial Commission, showed a decided improvement in September as compared with August. Besides an increase in the number of employes of two per cent., the aggregate of wages paid was not only five per cent. in excess of the previous month but was greater than any other month during the period since June, 1914.

Information such as this is indicative, we believe, of the trend of events toward renewed activity in all lines of business. The fact that the increase in activity is not large is not discouraging because small increases from month to month lend stability to the gain and make for sound readjustment.

It will be interesting to note what the returns for October over September will be in this state, and altho it is only one of the forty-eight units in the nation, yet it may be taken as being fairly typical of the national tendency.

* * *

War Department Improves Plans for Emergency Office Building

THE clay products manufacturers have made their appeal for better construction in connection with the erection of the temporary structure in Washington to take care of excess clerks in the War and Navy Departments felt, for so many letters of protest against wood being used in this work have poured into the capital that—well, Col. C. S. Ridley has announced a change in plans.

In the October 9 issue of *Brick and Clay Record* an editorial appeared entitled, "United States to Spend $2,000,000 on Temporary Frame Structure," so our readers are familiar to a large extent with the original plans of the government in this matter.

In revising its program with regard to the kind of materials to be used in the erection of this temporary office building the War Department has decided to use stucco on frame for the main walls, with hollow tile fire walls in the ends of the twelve wings, involving the use of approximately twenty-four thousand feet of burned clay.

In explaining the reason for not using a larger amount of clay products, and thereby securing a safer and better building, Colonel Ridley in a letter to Senator Penrose says: "The estimate obtainable of the cost of the building in frame construction, tile or by brick showed that the cost of the last named material was prohibitive, and that of the first named the lowest."

Now we know that under ordinary conditions the cost of brick construction over frame is not prohibitive because many estimates have been secured in times past proving that brick does not cost any more than ten per cent. over frame on the average. While Colonel Ridley volunteers the information that wood may have cost less in this particular instance because the Cantonment Division of the Council of National Defense has been able to purchase lumber at reasonable prices, yet even with these reduced prices for wood it hardly seems that such cheapness would make burned clay construction "prohibitive"—to say nothing of the greater safety from fire that would come with the use of burned clay.

What the industry needs is better information concerning the cost of burned clay construction. The fate of burned clay is too often left to an estimator who professes to know the cost covering all forms of construction but who is not an expert on brick or tile. We must recognize the fact that at present the burned clay industry has absolutely no technical facilities at hand whereby it can show conclusively and authoritatively that brick construction is NOT "prohibitive."

But it is one thing to know construction costs covering your material and another to get the information into the hands of the men who can use it. This brings us to the point which we wish to make namely, that organized promotion on a large scale is badly needed. It is the work not only of manufacturers of one product but should be participated in by all clayworkers. Publicity is what is needed. Let us take this lesson of the emergency office structure seriously and "cough up" our share toward the support of a definite promotion campaign.

* * *

Do Not Forget The American Ceramic Society's Membership Campaign

THE BUSINESS of getting a thousand new members for the American Ceramic Society is not going to be accomplished in a whirlwind campaign of short duration, but we believe will be brought to a successful culmination only after an extended period in which the efforts of present members will be steadily and consistently applied for the securing of the five applications each. This means that the entire movement should be constantly kept in mind.

The membership committee, of which Ross C. Purdy is chairman, is doing admirable work along this line. The committee's frequent communications will not permit the members to get their eyes off of the Society's passionate ambition—that of greatly increasing the body of men who shall receive the benefits of the organizations' work.

Please remember that the war has materially decreased the Society's income, both because of communications being cut off with members in Germany and Austria, and because many of our own men are now at the front or are on their way there. It is evident that they cannot be expected to maintain the payment of their dues in the Society while serving their country.

This means that a special effort must be put forth by those that remain at home. The Society is one of the outstanding forces for good in the whole clay-working industry and should not be allowed to suffer because of lack of support.

Keep right after those five members you are going to get so that the Society can present a good report at the coming annual meeting in February.

* * *

Lumbermen Hit Upon Good Plan For Home Building

OUR GOOD FRIEND the "American Lumberman" in a recent issue presents what appears to be a very good plan for building future business by building homes. It suggests that a portion of the present unusually large earnings of workingmen might well be saved by placing it into the hands of a dependable building and loan association instead of the money being wasted upon frivolous amusements and in the cultivation of expensive habits.

The thought is excellent and should bear fruit for it does not take much of a philosopher to see that if a part of the laboringman's earnings were conserved to be expended at a future date for an investment that is not only sound from his standpoint, but adds substantial wealth to the nation, it is going to help business.

Of course, the "American Lumberman" had the interest of the lumber industry at heart, as every truly efficient business paper should have, when it suggested this plan, which was presented in some detail in its September 22 issue. The plan, however, is so broad as to be capable of adoption by the clayworking industries, and since the lumbermen have not to our knowledge copyrighted the idea, we venture to suggest that this is done. Of course, a campaign of education, which must be largely local, must needs be undertaken to effectively bring to the attention of the workingman the advantages in owning a home. It takes money to do this, but we believe money spent in that direction would be well invested.

The manufacturers of and dealers in every type of building material can, we believe, co-operate to good advantage in promoting such a broad plan. We cannot talk too much about the desirability of a home for the workingman and the family of average circumstances, and would suggest that all interests pull together, including burned clay, toward the realization of a vast movement in the direction of building more and better homes.

WAR'S EFFECT *on*

Letters from Foreign Clayworking Companies and Con-
Industry in Various Neutral and Belligerent Countries,
by Experience of Others—Photographs Shown for the

WHAT IS NO DOUBT the most illuminating report of conditions in the clayworking industries across the water as a result of the war, has come to light in a number of replies to an inquiry from the American Face Brick Association thru the consular representatives in various neutral and belligerent countries. Information was obtained from Great Britain, Holland, Sweden, Italy and the Dominion of Canada, all of which is most fascinating in that it reveals definite and detailed data covering the period of the war to date, not only as regards actual manufacturing conditions but also the situation relative to building operations and what effect the great struggle has had upon construction of all kinds.

ORIGINAL PICTURES OF WOMEN BRICK MAKERS

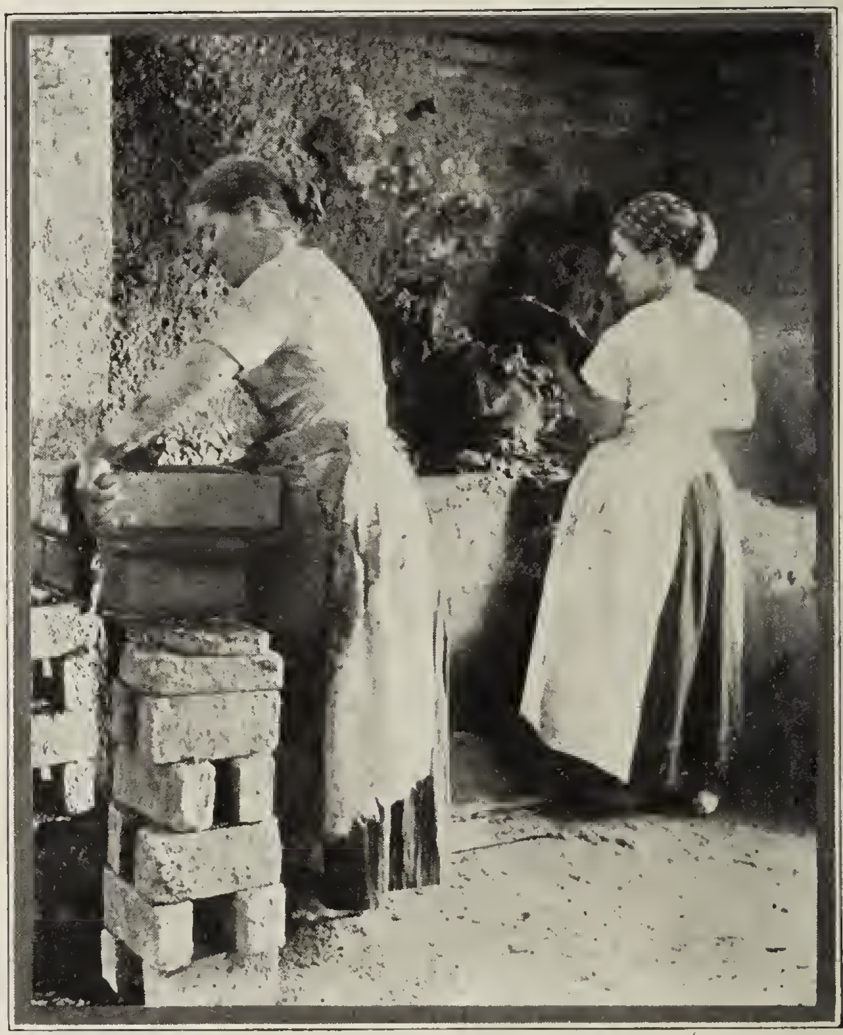
In connection with this story, which is bound to be of interest to every American clay products manufacturer, *Brick and Clay Record* has been able to obtain, thru Underwood and Underwood, of New York City, three remarkable pictures of women working in British brick yards, together with some detailed information concerning their labor. These pictures were taken by special arrangement and are the first of their kind to make their appearance in America. How women are employed in many of the warring countries in various capacities has been shown by several of the metropolitan newspapers and national magazines, but no brick plant pictures have been as yet published to our knowledge. Work around a brick yard is unusually strenuous and so it is with not a little interest that these photographs will be viewed by our readers.

But getting back to the report of conditions, the following is a copy of a letter sent by R. D. T. Hollowell, secretary-treasurer of the American Face Brick Association, to a number of sources of information in foreign countries:

WRITES ABROAD FOR DATA

"Dear Sir: This Association is a national voluntary organization. Its membership is limited exclusively to manufacturers of so-called face building brick, and its object primarily is to promote the welfare of the industry.

"With the declaration of war in August, 1914, the demand for face brick in United States was cut down almost instantaneously by at least 75 per cent. During 1915, the demand for face brick gradually increased, and the year 1916, in point of the number of face brick used, was the greatest in the history of this country. The demand was for the cheapest characters of this ware, however, the erection of large and more dignified structures, requiring the best class of material, having been seriously curtailed since 1914 by the shortage and extremely high prices for structural steel. The demand for 1917 promised to break



Women Brickworkers at Stourbridge, England, Taking the Place of Their Men Folks Who Have Joined the Colors. This Mother and Daughter Earn Between Them Twenty-Eight Shillings or $6.72 a Week.

BRICK *in* EUROPE

sular Representatives Abroad Set Forth Conditions in the
Presented So That American Manufacturers May Profit
First Time of Women Workers in British Brick Factories

all previous records. With the entry of this country into the war, accompanied by the flotation of the Liberty Loan, emergency legislative enactments, such as the Draft Law, the Federal Tax Bill and others, the various plans for centralizing all industries with the one object of winning the war in view has brought about a condition of uncertainty in building circles, particularly among those interested in the character of structures in which face brick would be used.

"The situation among our face brick manufacturers at present is a most serious one. A score of different handicaps are faced by our industry, among which shortage of labor, shortage of railway equipment, rising costs and decreasing demand are the most prominent. If our demand continues to remain at the present low level, a number of our manufacturers could well afford to shut down their plants. It is with the hope the manufacturers of this country might profit by the experiences of manufacturers of similar ware in ———, which has been directly affected by the war, that we are writing this appeal for advice.

"In Washington recently, the writer had luncheon with an old personal friend, Mr. R. J. Totten, of the Consular Service, now engaged in special work in the State Department. It was the writer's intention to handle this subject thru the office of the Foreign Trade Adviser, but Mr. Totten suggested we could probably secure the same information, with the possibility of getting it much quicker, by addressing to you direct.

"If it is entirely agreeable and consistent, this office and the face brick manufacturers of the United States would be extremely grateful to obtain the authentic experiences of the foremost face (also termed 'front' and 'pressed') brick manufacturer (if this class of ware is made in ———) and of the foremost common brick manufacturers of ——— on the following phases:

"(a) The demand for these materials during the first six months of the war; (b) the demand during each year 1915, 1916 and 1917 as compared to normal years; (c) the present percentage of production as compared to normal; (d) the present approximate amount of building as compared to normal; (e) the kind of building comprising the major portion of present structures; (f) whether residential construction is going forward and to what extent, comparatively; (g) the approximate percentage increase in present price of these materials to the consumer compared to that prevailing during the spring of 1914, and (h) whether these materials are being used as a war commodity, and, if so, in what ways?

"If you can consistently undertake this investigation, it might be of advantage to state positively, altho quite probably unnecessary to do so, that the members of our Association have no prospects for foreign trade other than the comparatively small amount of business previously transacted in Canada, and that this investigation was undertaken solely with the hope our people, who are manufacturing a commodity not regarded as useful in the pursuit of war, may have the benefit of the experience of manufacturers of similar ware in other countries who have already been thru what we are facing today.

"In the present serious situation in our industry, it is needless to impress upon you again just how much our people would appreciate prompt and detailed information along the lines suggested by the above."

ENGLISH BRICK USED MOSTLY FOR MUNITIONS FACTORIES

An interesting reply to this inquiry comes from the Ellistown Colliers, Brick, Pipe and Fire Clay Works, Ellistown, near Leocester, England, which reads as follows:

The American Consul General, London, W. I.

Dear Sir: Replying to yours of the 25th ult. re. trade in brick. Taking the two years prior to war as the "normal period," the demand for our materials since has fluctuated as follows:

A. *First six months of war.*

Facing sold exceeded normal sale by approximately 33⅓%; red wirecuts, 17%.

B. *Year* 1915.

Facing sold were less than normal sale by approximately 33⅓%; red wirecuts, 30%.

B. *Year* 1916.

Facing sold were less than normal sale by approximately 80%; red wirecuts sold exceeded 17%.

B. *January to June, 1917.*

Facings sold were less than normal sale over 6 months by approximately 50%; red wirecuts sold exceeded 50%.

Another Female Brick Yard Employe at Stourbridge. In This Case the Woman is Molding Fire Clay Shapes, Probably Furnace Blocks for a Munitions Factory, and It Will Be Noted She is Working in Bare Feet.

C. Present percentage of production 40% consisting principally of red wirecuts.

D. We cannot estimate the amount of building being done from the demand (which appears to be good) owing to the closing of works and the reduced producing capacity.

E. The chief work now being done is apparently for either new munition works, or extensions to existing works. works.

F. Residential building is practically at a standstill.

G. Selling prices have advanced approximately 30%.

H. See our reply to E.

This information is furnished without prejudice and is simply an approximated idea of the position as we find things ourselves.

INFORMATION BASED ON ASSOCIATIONS' FIGURES

An additional reply from J. H. Sankey and Son, Ltd., London, throws further light on conditions in England: The American Vice-Consul, London.

Dear sir: In further reference to your communication of July 25th, we now have pleasure in answering the various questions and giving you the best information possible.

Questions and Answers.

A. The demand for these materials during the first six months of the war: 35%.

Brick, 45%; pipe, 9%; tile trade, 35%.

B. The demand during each year, 1915, 1916, and 1917, as compared to normal years:

1915—Brick, 46%; pipe, 12%; tile trade, 50%.
1916—Brick, 68%; pipe, 48%; tile trade, 75%.
1917—Brick, 71%; pipe, 59%; tile trade, 88%.

C. The present percentage of, as compared to normal Reduced in same proportion as sales.

D. The present approximate amount of building as compared to normal:

See (B).

E. The kind of building comprising major portion of present structures:

Munition factories and dwelling houses for munition workers.

F. Whether residential construction is going forward and to what extent, comparatively:

At a standstill owing to government restrictions.

G. The approximate percentage increase in present price of these materials to the consumer compared to that prevailing during the spring of 1914:

Difficult to say. Prices vary so in different branches.

H. Whether these materials are being used as a war commodity, and if so, in what ways?

90% or more of present productions being used for war purposes.

We might add that this information is based on figures from the different associations, and which we have been able to obtain from some of our manufacturing friends, and we hope it will be of service.—*J. H. Sankey & Son, Ltd., London.*

BRICK BUSINESS IN HOLLAND HAS IMPROVED STEADILY

The American Face Brick Association, Pittsburgh, Pa.

Gentlemen: In reply to your favor of June 22nd, relative to "The effect of the war upon face and common brick manufacturers of Holland," I beg to state as follows:

Upon investigation, I find that a special face brick industry is not known in the Netherlands. Tho some of the Dutch brick manufacturers are making face brick, the importance of this product is so insignificant, that I have not been able to obtain any special information in that regard. All qualities of Dutch brick, face brick as well as common brick, are made in the same oven (kiln), consequently the same manufacturer produces all the brick necessary for a building. Structural steel is very seldom used here in brick buildings and naturally the high prices of steel are of no consequences to the building trade.

In accordance with the foregoing, the following information is based on the manufacture of common brick.

At the outbreak of the war in August, 1914, all business here became demoralized, and the demand for brick, which, by the way, had been very satisfactory during the summer, was nearly abolished. The impossibility of getting building loans and the total abolition of all credit created a veritable panic in the brick industry during the first six months of the war. The majority of the manufactories ceased in consequence all operation early in the season. The prices went down below cost.

During the whole year of 1915, the demand was insignificant and prices low. The total production was about fifty per cent. less than normal, which fact, however, also must be ascribed to the lack of working men, caused by the mobilization.

The year 1916 showed some improvement. The production during the year was about thirty per cent. less than normal, but as the building trade revived somewhat, and especially because the governments of State, Province and Cities continued all public work without limitation, the demand increased considerably and the prices went upwards.

PRESENT YEAR BEST SINCE 1914

The year 1917 has so far shown an improvement over the foregoing year. On account of the decreased production of last year, a shortage occurred in some of the sorts of brick (especially in street "klinkers"—Flemish brick) and the prices became exceptionally high. The high prices must also be ascribed to the existing shortage of coal. The production this year would be about normal, was it not for this shorage of coal and other fuel. Also the production in 1916 suffered on that account.

The present approximate amount of building is fifty per cent. below the normal.

The kind of buildings comprising the major portion of present structures is characterized by the noticeable change in the use of brick this year; the inferior qualities of brick, hardly ever called for in normal times, are now preferred. However, this fact does not injure the brick manufacturing in the least.

The approximate increase in present price compared to that prevailing during the spring of 1914 is one hundred per cent. As a war commodity, the Dutch brick is not used.

I beg to add that the above information has been obtained from the "Dutch Brick Manufacturers' Association."

Very respectfully yours,
A. C. Nelson,
American Consular Agent.

A Group of Women Who are Employed in Another British Brick Yard. In Spite of Their Laborious Task and the Hardships Which They are Suffering Because of the War, They Find Occasion to Smile for the Camera Man.

WAR HITS ITALIAN BRICKMAKERS HARD

Gentlemen: I have received your letter of June 22nd, asking for information concerning the effect of the war upon face and common brick manufacturers in Italy.

Brickmaking in Italy is done by individual makers in a great number of places. There is no general association, no government control, no source from which can be had information as to product, or special information. Therefore, I am, to my regret, unable to reply in detail to the questions you put to me, and must confine myself to available general information as to this consular district, and particularly to the city of Rome, which is the principal center of demand for bricks for its development in buildings.

Brickmaking, even before the war, being carried on by persons of no great mentality or business capacity, was always a poor industry, subject to competition that retarded its development.

So far as the makers are concerned, there has never been the marked difference between common brick and face or pressed brick as at home. Masons here use the same brick for outside as for inside laying, finishing off the outside edges or ends, if the wall is not to be covered with stucco.

The effects of the war were disastrous to this industry. The makers who most immediately suffered were those who had made the most active competition in the market, and who, because of previous contracts made under disadvantageous conditions, were ruined. Those caught without large stocks with which to meet the situation had to close. Among other causes of closing were lack of fuel, lack of labor, and a great lessening of construction.

LACK OF FUEL SERIOUS HANDICAP

The lack of fuel was partly met by using Italian lignite. This is low in carbon, and could not meet the needs of the makers. Moreover, it was difficult to get and costly, for the government requisitioned mines for its own supply. Of laborers, the greater number remaining were old men, a few young ones not adapted to military duty, and women. The consequence has been that the industry is passing thru a period of inactivity and small profit, hoping for a return to normal conditions at the end of the war.

The present product is used in making repairs and in government construction. Private building, because of the high prices of all materials, has almost entirely ceased.

The Italian government, in order to avoid idleness and misery among masons, made timely provisions for their benefit, causing a continuation of large operations already begun, and the building of barracks, hangars, munition factories, etc. The Roman brick industry has in this way been greatly helped. Before the war, the annual production may be estimated to have had a value of $12,000,000. In spite of the difficulties above mentioned, the product may be said to have fallen twenty-five per cent.

Prices have been subject to great variation. As compared with those of 1914, they are about twenty-five per cent. higher.

Again regretting that conditions do not enable me to give your Association information which may be helpful in meeting the situation which confronts you, I am, Gentlemen, Very respectfuly yours,

Francis B. Keene,
American Consul-General.

SWEDISH WAR PROSPERITY KEEPS INDUSTRY BUSY

Gentlemen: I have your letter of June 22, 1917, as to the effect of the war upon face and common brick manufacture in Sweden. On receipt of the letter steps were at once taken to locate the principal factories and to secure the information you desire. At present writing no statistics of value are at hand, tho we are hoping in the near future to have further information and will then write you again. The industry itself is one of considerable importance which has probably not been greatly affected by the war. Sweden has had considerable prosperity, due to the war, with a large amount of factory, residence and other building. This is especially true of Stockholm which is by far the largest city of the country and in which there have been many signs of prosperity and much new building, especially in the residence portions of the city. In this building a regularly shaped and an apparently hard-burned brick are in common use. The walls, while perhaps less attractive in appearance than if made of American pressed brick, have a substantial appearance and probably resist climatic conditions well.

BUILDINGS NOT HANDSOME BUT DURABLE

Several five and six-story apartment houses have recently been built of this class of brick, while several are in process of construction. A very large and very attractive museum building recently built just outside of the city limits (Stockholm) is built of pressed brick with stone trimmings. In this case the impression made is that of durability. While information is not at hand as to just what increase there has been in the cost of making brick nor in prices at which they are sold, the tendency has been for prices of labor and materials to increase rapidly, while fuel has gone to extraordinary prices.

It is not apparent that the industry here has any direct connection with the war as in the case of many other industries such as the metal industry, textile industry, leather industry, foodstuffs, etc. In the case of the last named industries there was for the time the question of imports and exports, together with that of army equipment in the country itself. The food question has of course been and is yet a difficult one, due to special conditions of export and import. It would seem that the brick industry is not thus affected except in the matter of fuel and in the general increase of prices as to nearly all commodities.

Very respectfully yours,

H. W. Harris,
American Consul-General.

SEVENTY-FIVE PER CENT. OF MACHINES IDLE IN CANADA

Dear Sirs: Replying to yours of June 22nd, regarding the effects of the war on face and common brick manufacturers of the Dominion of Canada, we beg to state that when war was declared it practically stopped building all over the Dominion of Canada. For the first year of war, banks would not lend money to builders on any security, no matter how good. This practically stopped building except in cases were the buildings were well under way. In some cases, however, buildings that were started were abandoned and were not finished. After about a year the banking interests saw they were not justified in stopping building altogether and the result has been that building improved some during 1916. The cities were worse hit than any other parts of the country. Building in some of the large cities, fell off very largely as you will see by the list of Toronto building permits from 1913 to 1917. Permits last year in Toronto included the Toronto Union Station which swelled their amount very considerable.

Toronto Building Permits.

Year	No. of Erections	Amount
1913	9884	$27,038,624.00
1914	8953	20,694,288.00
1915	5212	6,651,889.00
1916	4753	9,881,671.00
1917 to May 31st		2,632,984.00
1916 to May 31st		1,210,000.00

OTHER CONDITIONS MADE MATTERS WORSE

While the war helped to cut off the building trade, there were other conditions in our country about the time war came on which helped to make matters much worse. In the fall of 1913, the money interests saw that it was about time that the great boom in the West came to an end and consequently building commenced to fall off.

We do not believe that your country will be affected to anything near the extent we have suffered. Your country is too large and money is too plentiful too have anything like the slump experienced in Canada. We have suffered in the brick business as no other industry possibly has suffered. Seventy-five per cent. or more of the brick machines in Canada have been idle during the war and a great number of companies have gone into liquidation.

Yours truly,
Milton Pressed Brick Co., Ltd.,
J. S. McCannell, President.

Be Sure and Read

the editorial on page 754 which has been written, commenting upon the foregoing article. It will throw added light on the question:

How About the U. S.?

PREPARE NOW!

That is the Message to Face Brick Makers and the Way to Do It is to Support the Association's Promotion Plan

PREPAREDNESS is a word which, for the time being, has faded from public view. The connection in which it became popular has given way to a far more important national crisis, and so the word and its meaning are not so prominent in the public mind as previously.

OPPORTUNITY PRESENTED NOW

Preparedness, however, is a thought which should be very much in the minds of face and common building brick manufacturers, the former particularly. The opportunity is being given at this writing to such manufacturers to make adequate preparations for future business, at a time when such preparation is not difficult, and when those who are following the trend of events carefully can see how it will stand good stead in the year to come.

In the September 25 issue of *Brick and Clay Record* announcement was made of the big plan of the American Face Brick Association to raise a promotion fund of $300,000 annually for three years with which to bring to public attention by effective means the merits of face brick as a building material. For fear that some may have forgotten the important features of this plan, we will sum them up briefly as follows:

A contract form has been prepared and is being submitted to every face brick manufacturer, asking him to become a member of the association, if he has not already joined, on condition that he pay fifty cents for every thousand face brick shipped during the term of thirty-six months following the date on which the agreement takes effect, such payments to be made monthly. The agreement will not become effective unless manufacturers of face brick whose output in the year 1916 in the aggregate amounted to six million face brick, sign up.

Advance notice of sixty days is to be given of the date upon which the first payment under the agreement becomes due and payable.

In consideration of these requirements the association agrees to use its best efforts to exploit the use of face brick.

PRACTICALLY ALL ON SAME COST BASIS

The important feature of this plan is that when the manufacturers of six million face brick sign the agreement, it will include approximately eighty per cent. of the production of the entire United States. This minimum is extremely high but that in itself is an advantage to the effort, since every signer of the contract can thoroly understand that if it becomes effective, practically all, if not his entire competition will, of necessity, take into its cost precisely the same amount.

Another point is that, entering into a enforceable contract is desirable from every standpoint; from that of the member it means protection and good faith on the part of every other signer.

But here is where the matter of preparedness comes in. Every member of the American Face Brick Association can promptly sign the articles of agreement because considerable discussion of this subject has already taken place, and non-members can take prompt action because full announcement has been made. If times were normal it would require several months of preparation before the huge program contemplated could be undertaken. Even if the minimum would sign up at this time the movement could not be gotten under full headway for a year or possibly eighteen months.

GOVERNMENT EXPENDITURES SOON TO BE FELT

The face brick business is admittedly depressed at the present writing, but no one can say that this situation will long continue. It will be remembered that when the war in Europe was declared a similar depression followed, not only in the clayworking industries, but in many other lines of business. It was common talk to hear of the great war orders that were being placed in this country. In fact, almost daily the newspaperes printed stories about the large amount of money that was involved in munitions contracts and orders for other supplies, but it was a long time before the nation felt the effect of this unprecedented flow of wealth toward America. It was not until the late summer and fall of 1915 that building began to pick up after the war depression which followed the declaration of hostilities.

What followed this renewal of building activity in the latter part of 1915 is recorded in the annals of 1916, which year was a record breaker for construction in this country.

The way 1917 opened it looked as tho everything was set for a twelvemonth that would surpass the high mark of 1916 building, but with the declaration of war on April 1st a period of uncertainty and conservatism began to develop which has about reached its height at this time. The floating of two tremendous Liberty Loans, the War Revenue Bill and other congressional action affecting industry and business, as well as the demands of war upon manufacturing facilities have worked to shut off the supply of money normally flowing into building channels. Capital moreover is rather apprehensive but this feeling is fast disappearing.

PROSPECTS SHOW IMPROVEMENT

Like the first streaks of dawn, "Dun's Review" is indicating returning prosperity to many lines of business, which we believe will continue thruout the rest of the autumn and winter so that next spring will see very bright prospects for an extended building program during the year. The loans which have and are now being subscribed, are in turn being spent right here at home. The effects of circulating such vast sums will soon be felt and will no doubt operate to stimulate building.

The face brick industry will not be in a position to take advantage of this break when it comes, as it is sure to come, unless it prepares now for the future. Adequate preparation consists in every manufacturer to whom the proposition has been submitted, signing up the articles of agreement at once so that the minimum can be obtained in the shortest possible time and the program of promotion gotten under way with the least possible delay.

If the face brick industry does not get its share of business when it comes it will have no one to blame but itself, since the opportunity to do something is being offered now.

Do not hesitate about this matter nor allow precious time to be frittered away in unnecessary delay.

The plan proposed by the American Face Brick Association is the most practical, and, for this reason has the best chance for success over any yet advanced in the clayworking industries. The amount of money involved is sufficient to make an impression upon the building public and steps should be taken at once toward making this fund a reality.

* * *

National Brick Manufacturers' Association to Hold Annual Meeting in Indianapolis

The capital of Hoosierdom has been chosen as the place, and February 3 to 9, 1918 as the time for the convention of the National Brick Manufacturers' Association. Headquarters will be maintained at the Claypool Hotel, Indianapolis' foremost and veteran hostelry.

So far as convenience in transportation is concerned, Indianapolis is no doubt a very good place for the nation's brickmakers to meet in annual session. This fact will in all probability be conducive to a large gathering early in February.

* * *

Canadian Clayworkers Choose Toronto as 1918 Rallying Point

"Mark this date on your calendar," says Gordon Keith in his announcement of the Sixteenth Annual Convention of the Canadian National Clay Products Association, at the Prince George Hotel, Toronto, January 29-30-31, 1918. And well is this said for the Canadians usually stage an annual get-together that is worth while both from the point of a quality program and good fellowship.

"Last January," continues the official announcement, "at Hamilton, there was held one of the most enthusiastic and educative conventions in the history of the association. And we have held many excellent conventions.

"This is an indication of a very important fact: that clay products manufacturers are realizing the folly of the hermit ideas of the Middle Ages and appreciating the advantages of meeting together and discussing matters of mutual interest.

"There should be at least one representative from your plant at the Sixteenth Annual Convention of the C. N. C. P. A., January 29 to 31, 1918, to hear the papers read and discussions on the various subjects.

"The cordial relations between the United States and Canadian manufacturers is shown by the number who attend each other's conventions, and it is hoped there will be a large attendance at the 1918 convention from across the border.

"Let us make the association of greatest possible benefit by arranging for a discussion of our problems."

Secretary Keith urges all interested to notify him as to a particular subject upon which such a one would like to hear a paper read at the convention. He asks also that suggestions be offered as to likely candidates for the reading of papers and also urges that anyone desirous of obtaining information on a particular problem of plant operation, get in touch with him at once.

* * *

N. P. B. M. A. Convention Plans Unfold

Plans are being completed for the annual meeting of the National Paving Brick Manufacturers Association, to be held at Hotel Hollenden, Cleveland, Ohio, November 19 and 20. The festivities will open with a dinner on the evening of the nineteenth, at which speakers of national prominence will be present. Subjects of a patriotic nature will occupy an important part in the convention program, in keeping with the recent recommendations of the Chamber of Commerce of the United States.

Following the suggestions of the Committee on Cooperation of the Council of National Defense, which urges for co-operation between business and the government in carrying on the war thru business organizations rather than individual businesses, suggestions on how the paving brick manufacturers can best serve the country's interests will be discussed. The actual application of this principal will probably take the form of developing a means which will enable paving brick manufacturers to succeed in developing rural highways to augment transportation facilities.

It is thought that the most important suggestion to be made to further this program is the creation of a national highway board to exercise advisory powers and to influence the building of such stretches of highways of immediate importance to the country in transporting supplies and foods for which the country stands in immediate need.

It is generally known that many army officers are deeply concerned over the condition of roads leading to cantonments, a fact which shows that great relief and advantage to military efficiency could be accomplished thru the activities of such a board. It is likely that a committee will be appointed at the annual meeting of the paving brick makers to present these matters to the government. These are among many details being arranged by Secretary Will P. Blair, of the National Paving Brick Manufacturers Association.

* * *

Swank's Sons Buy Large Clymer (Pa.) Plant

The entire block of stock of the Clymer (Pa.) Brick and Fire Clay Co. has been taken over by the Hiram Swank's Sons, Inc., of Johnstown, Pa. It is said that the consideration amounted to about $150,000.

The Clymer Brick and Fire Clay Co. owned about 200 acres of land in Cherryhill Township in Indiana County and had a large modern plant. The clay used is obtained from a vein of fire clay said to be seventeen feet in thickness, and of very good quality. The plant recently has been turning out a considerable quantity of radial chimney block altho it also makes some paving and building brick. The investment in the plant, it is said, amounted to about $150,000.

* * *

Freight Increase on Pavers Postponed

The proposed advance of fifteen cents per ton in freight rates in Illinois, which the railroads have been endeavoring to get into effect on paving brick for the past two years, and which was to have been put into effect on October 16, has been suspended until February 13, 1918. This was the order issued by the public utilities commission recently. A protest against the proposed raise was filed some time ago by the Springfield Paving Brick Co., the Danville Paving Brick Co., the Barr Clay Co., of Streator, the Alton Paving Brick Co., the Purington Paving Brick Co., of Galesburg, and the Murphysboro Paving Brick Co. The brick manufacturers state that there should be no raise in the rates for paving brick unless the rates on other commodities are also increased and that the rates on brick now in force are greater than those on other products.

Ohio Plants Warned of Gas Shortage

All clay plants in the Upper Ohio Valley, which includes firms making all kinds of ceramic products in northeastern West Virginia and southwestern Ohio have been advised by the Manufacturers' Heat and Light Co., of Pittsburgh, Pa., that all industrial rates for gas for fuel purposes will be withdrawn January 1 next, and also that the supply of gas for industrial purposes after that is not guaranteed, not even for gas engines unless there is a surplus from the supply for domestic mains. The warning sounded by President John E. Gill of the gas company follows:

"In our letter to you of June 30, 1917, we warned you that in all probability we would be unable to supply our industrial consumers during the present winter, because of our inability to produce or buy sufficient gas for that purpose, and that you should accordingly be prepared to arrange for other fuel.

"Notwithstanding every effort we have made, both to enlarge our production and to purchase gas, we have been unable to secure an adequate supply to enable us to continue with our industrial customers. One contract, which was made several years ago, and from which we obtained 15,000,000 cubic feet of gas per day will terminate on December 15, 1917. We have secured an extension thereof to January 1, 1918, but cannot have it further extended. Even with this supply of gas there have been shortages upon our lines already, and of course, there will be greater shortages as the weather gets colder.

"Under the circumstances it is utterly impossible to undertake to supply industrial consumers, and accordingly, the industrial rate will be withdrawn on January 1, 1918.

"You are accordingly advised to make preparations to supply your plant with other fuel on or before said date. Meanwhile, and until then, we will do the best we can, altho we advise you now that there will be a shortage from time to time. From the surplus remaining after supplying our domestic consumers after January 1, 1918. we will supply such of our customers as desire, who have gas engines and appliances, where they are unable to substitute other fuel, but this will be with the understanding, of course, that it is out of the surplus only.

"We regret the necessity of this action, and are giving you this notice so far in advance so that you may make the changes in your plant without embarrassment."

Shortages of gas in the potteries have already been reported, and on one or two occasions the pottery manufacturers were notified not to light their kilns. It is also found to be impossible to make attractive contracts for coal, the shortage of this fuel being very marked at this time.

* * *

Massachusetts Brickmaker Killed in Accident

Alonzo E. Locke, president and director of the New England Brick Co., of Boston, Mass., was killed in an automobile accident at Charlestown, N. H., on October 11, while he and Mrs. Locke were enroute from their home in Lexington, Mass., to their summer place at Felchville, Vt.

Mr. and Mrs. Locke were riding in a closed car and were crossing the railroad tracks when the machine was struck by a heavy freight train. The automobile was demolished and both occupants thrown out. Mr. Locke had his head crushed and one arm broken and was killed almost instantly. Mrs. Locke escaped serious injury.

In addition to heading the New England Brick Co., Mr. Locke was a member of a prominent Boston brokerage firm. He was a native of the famous town of Lexington, in which he was born in 1863, and was a direct descendant of the Locke family which settled in Lexington in 1637. Three sons survive, one of whom, Clayton G. Locke, is connected with the New England Brick Co., and another, Winthrop W. Locke, was associated with his father's brokerage house. The elder Locke was connected with a number of street railway companies as an officer or director and with other business interests.

* * *

Oregon Manufacturers to Meet November 8 and 9, at Portland

A meeting of the Oregon Clayworkers' Association will be held on Thursday and Friday, November 8 and 9, at Portland. Members will assemble at the Secretary's office at 12:30 P. M., November 8th and leave by interurban car for Vancouver, Wash., at 1 P. M., to visit the plant of Denny-Renton Clay & Coal Co., at Image, Wash. Upon return, they will visit the Hidden Bros. Brick Co.'s plant at Vancouver. A business session will be held in the evening at 7:30 P. M. in the rooms of the Chamber of Commerce, Oregon Building, Fifth and Oak. After the session, the members will visit, in a body, the Manufacturers and Land Products Show in the new Auditorium Building.

On Friday, November 9th, the members will assemble at 9:30 A. M., for a trip over the Columbia Highway. The party will return in time so that out-of-town members can leave on the afternoon trains for their respective homes. The Board of Directors expects every member to be present at this fall meeting. There is no excuse for "no time to come" as you can arrange your affairs in such a way as to be able to attend. The railroads will put into effect, cheap rates for the Land Products Show and you see that you get the benefit of these reduced fares. Remember the dates, Thursday and Friday, November 8 and 9.

* * *

Strained Fuel Situation in Cleveland

The fuel situation in Cleveland, Ohio, was made more acute last week by the East Ohio Gas Co., when, in obeying the order of the Public Utilities Commission, it shut off the supply of natural gas from more than one hundred industrial plants in the district. This means that there will be an even greater demand for the coal expected to come into the city. The saving of gas for domestic or other purposes than industrial will amount to 30,000,000 cubic feet every twenty-four hours, M. B. Daly, president of the gas company, announces. Only factories working on munitions for the government will not be shut off, excepting a few which have not had the opportunity to change their equipment.

* * *

Bureau to Push Drain Tile in Iowa

The Western Tile and Drainage Bureau has been re-organized as a subsidiary of the Permanent Building Society and will proceed at once with an active campaign particularly among the farmers of Iowa. The organization is intended to promote the use of drain tile and an extensive advertising campaign will be carried on. It is proposed to use two media of reaching the farmers; one will be a personal letter to farmers and a very carefully selected list for this purpose has been secured. In addition to the letters the agricultural journals will be used extensively for advertising the advantages of drain tile.

* * *

At the large Navajo Indian reservation thirty-five miles below Farmington, N. M., are manufactured the brick which are used in the construction of all buildings in the reservation. These brick, which are said to be of good grade, were used in the construction of a large school.

USING INSTRUMENTS *in* DRYER REGULATION

The Standard Refractories Co., Claysburg, Pa., Believes in "Stopping the Leaks." Their Dryer Man is Here Shown Renewing the Chart on the Recording Thermometer Which Has Enabled Them to Maintain a Constant Temperature in All Dryer Tunnels and to Reduce Dryer Costs.

By Outlining the Factors of Successful Drying and Showing How Those Factors May be Controlled by the Use of Such Instruments as the Anemometer, Hygrometer, Pitot Tube, and Thermometer, This Article Furnishes Powerful "Ammunition" to the Plant Superintendent in His "Drive" for Uniform Results from Every Tunnel

Staff Article

THE SUBJECT OF DRYER CONTROL and regulation by the use of various instruments, altho of the utmost importance, is one which has received but little attention in the past outside of the class rooms of the ceramic departments at different universities. This may be, in a measure, an explanation of the comparative lack of knowledge regarding these instruments and their use, which exists in the clay industries.

It is hard to explain the reason for the limited use of such instruments as the hygrometer (wet and dry bulb thermometer), the anemometer, the Pitot tube, the thermometer, and similar instruments. When properly employed they make possible the scientifically correct operation of the dryer; they bring about uniformly good results from every tunnel—an accomplishment which is very seldom obtained from unsystematic operation; they make it possible to compute the approximate amount of air required to dry the clay ware which is passing thru the tunnels and determine also the correct temperature and relative humidity of that air at both entrance and exit points; they are very interesting and extremely easy to use. In a word, they are indispensable in dryer operation, and it is with the hope of increasing the knowledge regarding their use and value by a plain and simple description of the instruments and how they are used, that this article is written.

The subject will be dealt with in terms readily understood by the practical clayworker. However, it will be necessary to employ formulae in the course of the article which will require study to be understood, but even in the presentation of these formulae every effort is made to preserve simplicity and to explain the terms and figures used.

FACTORS AFFECTING DRYING

In the first place it is well to remember that the following three factors have a very important effect upon the successful drying of clay ware:

(1) Velocity of gases passing thru dryer.
(2) Relative humidity of gases at exhaust end of dryer.
(3) Temperature of the gases at various points in the dryer.

The above factors, which are very much inter-related, may be regulated to a great extent, first, by the size and speed of the fans; second, by the size of the tunnels and flue openings leading into the tunnels, and third, by the temperature of the gases entering the tunnel.

To get the proper amount of waste heat gases thru the tunnels a fan of certain size working at a definite speed is required. Very often the efficiency of the dryer is materially impaired by the difference in the flow of gases in different tunnels. Under such a condition satisfactorily dried ware may be obtained from certain tunnels, while decidedly poor results are obtained from others. To avoid this the velocity of the gases passing thru the tunnels should be tested at frequent intervals by an instrument known as the anemometer, which will be explained in detail later.

The subject of air in motion presents a very complicated topic. The internal eddies, cross currents, and general intricacy of motion of the particles among each other, occurring in the dryer tunnels or flues, are almost entirely defiant of any mathematical law. It is necessary to assume as the basis of a scientific investigation that the gas particles move side by side in such a manner that those which at any instant form a lamina or thin sheet, perpendicular to the axis of the flue or tunnel, remain together as a lamina during the further stages of flow. Experiment is then relied upon to make good the discrepancies between the indications of the formulae resulting from the theory and the actual results of practice.

VELOCITY PRESSURE IN DRYER TUNNELS

Air in motion in a conveying system is under the influence of three distinct pressures; these are the velocity, static, and dynamic, or total pressures.

The velocity pressure is that pressure which is required to create the velocity of the flow.

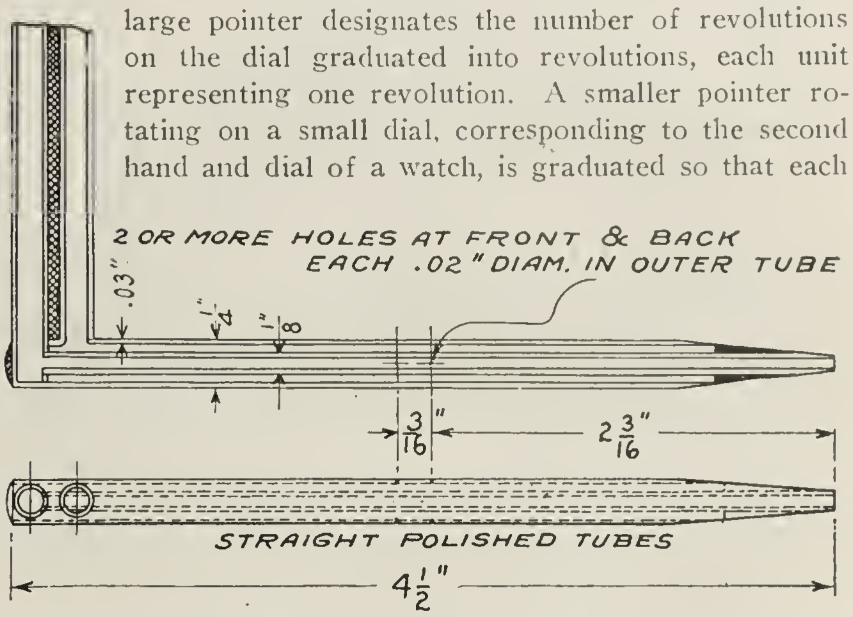
The static pressure, also termed the frictional or resistance pressure or maintained resistance, is that pressure required to overcome the resistance offered to the flow, by the walls, obstructions, etc.

The total pressure, also termed the dynamic or impact pressure, is the sum of the pressure required to overcome the frictional resistance offered to the flow, and that required to create the velocity of flow. In other words, the total pressure is equal to the sum of the static and velocity pressures.

In the waste heat tunnel dryer we are mainly concerned with the velocity of flow. For measuring this velocity we have two instruments both of which have found some application on clay plants; the anemometer and the Pitot tube.

MEASURING VELOCITY WITH THE ANEMOMETER

The anemometer is so constructed that the slightest current of air sets it in motion. It consists of relatively large vanes attached to a small hub which is connected with a mechanism which registers the number of revolutions of the hub upon a dial located in the center of the instrument. This dial resembles a watch face in that a large pointer designates the number of revolutions on the dial graduated into revolutions, each unit representing one revolution. A smaller pointer rotating on a small dial, corresponding to the second hand and dial of a watch, is graduated so that each unit represents one hundred revolutions. The greater the current of air the faster the vanes will revolve.


2 OR MORE HOLES AT FRONT & BACK EACH .02" DIAM. IN OUTER TUBE
.03"
1/4"
1/8"
3/16"
2 3/16"
STRAIGHT POLISHED TUBES
4 1/2"

Pitot Tube Used to Measure Static and Velocity Pressures of the Gases in the Dryer Tunnel.

Brick Plant Superintendent Taking Draft Reading With Anemometer in Tunnel.

To operate this instrument, all that is required is to hold it in the dryer tunnel above or beneath the car in such a manner that the air current is perpendicular to the rear face. The vanes will then revolve at a speed proportional to the velocity of the air. By referring to a watch and then to the counter on the anemometer the velocity of the air current in feet per minute passing thru the tunnel can readily be ascertained. By multiplying this number by the free area of the tunnel, that is, the area of the tunnel minus the area of the true cross section of the car of ware, the volume of gases passing thru the tunnel per minute can be found.

As can readily be seen the time and effort required to perform this simple operation is very small. Care must be taken, however, when using the anemometer to take readings at different parts of the tunnel cross section, because it sometimes occurs that a lamina of air will be found clinging almost motionless to the wall or ceiling. If, in this case, a reading was made of the air current at a point were the velocity was great, the tunnel might show a volume of air much greater than was actually passing thru it. These dead air spaces may occur along the walls or ceiling of the dryer, or at some point in the tunnel and make it necessary at times to test for uniform velocity thruout the whole tunnel.

A PRACTICAL EXAMPLE

A simple example will illustrate more clearly how important it is to have a certain amount of air passing thru the tunnel. Knowing the temperature and humidity of the air, we can find in suitable tables the number of pounds of water one cubic foot of the air at different temperatures can take up, and from this we can obtain a fairly good idea as to the amount of air required to carry off this moisture.

We will assume that it is required to dry 60,000 brick in twenty-four hours. Each brick weighs 6.6 pounds wet and contains 25 per cent. of water. The temperature of the outside air is 50 deg. Fahr. the air being saturated. The temperature of the moist air leaving the dryer is 86 deg. Fahr. and the air is three-fourths saturated. How many thousand cubic feet of moist air must be taken out of the dryer every minute?

1 lb. of dry air at 50 deg. Fahr. when saturated contains 0.0077 lb. of moisture.

1 lb. of dry air at 86 deg. Fahr. when saturated contains 0.0275 lb. of moisture.

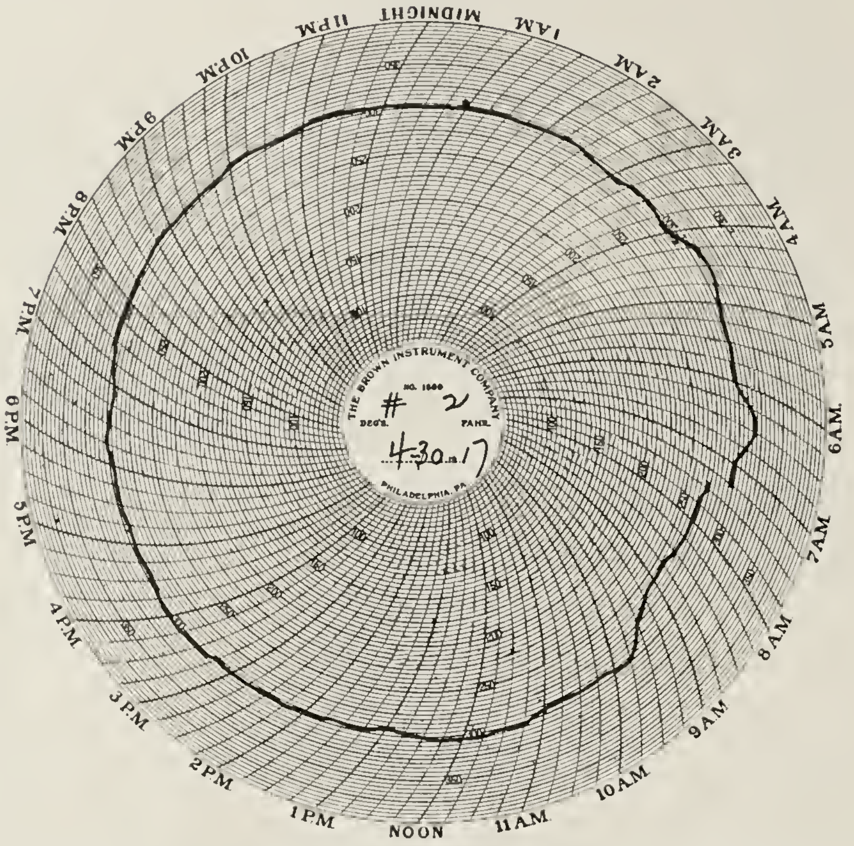


Chart from Recording Thermometer Showing Dryer Temperatures for Almost Every Minute in the Twenty-four Hours of a Day.

At the same temperature and ¾ saturated it would contain ¾ x 0.0275 or 0.0206 lb. of moisture.

The difference between these two is the amount of moisture being carried out of the dryer by each lb. of dry air or 0.0206

0.0077

———

0.0129 lbs. of moisture.

There are 6.6 pounds of water and clay in each brick, of which 25 per cent. is water, or about 1.65 lbs.

60,000 x 1.65 equals 99,000 lbs. of water to be evaporated

99,000 ÷ 0.0129 equals 7,675,000 lbs. of dry air required to carry off this amount of moisture.

7,675,000 × 0.0077 equals 55,250 lbs. of moisture carried into the dryer by the entering air.

7,675,000 plus 55,250 plus 99,000 equals 7,829,000 lbs. of moist air leaving the dryer at 86 deg. Fahr. in twenty-four hours.

$$\frac{7,829,000}{1,440\ \text{(Minutes)}}$$ equals 5,430 lbs. of moist air leaving the dryer each minute.

1 lb. of moist air ¾ saturated equals .524 cubic yard.

5,430 × .524 equals 2,850 cubic yards of moist air leaving dryer per minute.

2,850 × 27 (cubic feet in one cubic yard) equals 77,000 cubic feet of moist air to be removed from the dryer every minute.

Knowing the area of the cross section of a dryer tunnel we can by means of the anemometer determine the amount of air passing thru the dryer each minute and can then check this amount with that computed above. By experimenting with different velocities in the tunnels and noting the results obtained by them, a condition will be found at which the best results are obtained. These same conditions then should always be maintained and the anemometer should be used to check up the velocities in the tunnels.

Another instrument which is sometimes used for measuring the velocity of the air in the tunnels is the draft gauge with a Pitot tube attachment. The Pitot tube consists essentially of two parts; a horizontal glass tube which points in the counter direction to the flow of the gases and which converts the sum of the static and velocity pressures into a head which may be measured on a gauge which is attached by means of rubber tubing to a vertical tube communicating with the horizontal tube. In the horizontal tube there are two or more small holes in front and back which register the static pressure alone thru a second vertical tube communicating with a water or an oil gauge, depending upon the kind used By subtracting the reading obtained on the gauge connected to the outer tube, which communicates the static pressure, from the reading on the other gauge attached to the inner tube, which communicates the total pressure a value is obtained for the velocity pressure. The value that this velocity pressure should have for best results can be determined by varying the velocities in the dryer tunnels and noting the effect produced.

RELATION OF HUMIDITY TO DRYING

The velocity alone will not reveal the best conditions of regulation. The properties of the air or gases have an important effect on drying. Air has the property of holding a certain amount of water in gaseous form. At a definite temperature it has a definite capacity for holding moisture. When that capacity is reached the air is called saturated. If any more moisture be added it will condense as a liquid instead of remaining in the air in gaseous form. The amount of moisture or water vapor which the air will hold varies directly with temperature and inversely with the atmospheric pressure. The amount of moisture actually contained in the air compared to the amount which the air at the same temperature would hold were it saturated, is called the relative humidity; hence, if the relative humidity is low we know that the air can hold considerably more moisture. If high, we know that it is approaching saturation. The higher the relative humidity the slower the air will be to take up moisture and therefore, the slower the drying of the ware with which it comes in contact. The waste heat gases leaving the dryer should have a relative hu-

Determining the Relative Humidity in Dryer by Means of a Hygrodeik.

midity between 85 and 95 per cent. Above 95 per cent. saturation, or relative humidity, trouble may result due to condensation. Below 85 per cent. relative humidity the fans are pulling the air thru too rapidly and may cause trouble with cracking in drying.

A hygrometer, or wet and dry bulb thermometer, of which there are several forms, may be used to determine the relative humidity. It consists essentially of one thermometer of the ordinary type which is called the dry bulb thermometer, and which simply indicates the temperature of the surrounding air, and a second thermometer which has its bulb covered with thin muslin, kept moist by capillary attraction, that end of the muslin not covering the bulb being in a cistern filled with pure water. This is the same principle which keeps the cotton wick in a kerosene lamp moist. The evaporation of the moisture from the muslin around the bulb absorbs heat, consequently causing the thermometer to register a lower temperature than that registered by the dry bulb thermometer. The temperature of the wet bulb falls in proportion to the amount of water evaporated from the muslin covering it, which is dependent upon the dryness of the air. Thus, by noting the temperatures on both the wet bulb and dry bulb thermometers the relative humidity may be ascertained by refering to tables which have been compiled showing the degree of humidity under various temperature readings on both thermometers.

The hygrodeik, which is one form of a hygrometer, has a chart mounted upon the instrument from which the degree of humidity is readily obtained. To operate this instrument place it in the end of the dryer where the air is exhausted and after a minute or two when a constant reading of temperatures has been reached, note the reading on both the dry bulb and wet bulb thermometers. Then, to find the relative humidity, swing the pointer to the left of the chart and adjust the sliding index to that degree line upon the chart which corresponds with the degree of temperature shown upon the engraved stem of the wet bulb thermometer. Then swing the pointer to the right, until the sliding index intersects the curved line which extends downward to the left from the degree line upon the chart corresponding with the indicated temperature of the dry bulb thermometer. At this intersection the pointer will designate the relative humidity on the scale at the bottom of the chart.

TABLE SHOWING VAPOR CAPACITY OF 100 CUBIC FEET OF AIR

Vapor Press	Deg. Fahr.	Per cent. of Saturation or Relative Humidity					
		100	90	80	70	60	50
0.361	50	0.060	0.054	0.048	0.042	0.036	0.030
0.518	60	0.085	0.077	0.068	0.059	0.051	0.043
0.733	70	0.117	0.105	0.094	0.082	0.070	0.059
1.024	80	0.161	0.145	0.129	0.113	0.097	0.081
1.410	90	0.218	0.196	0.174	0.153	0.131	0.109
1.918	100	0.292	0.262	0.233	0.204	0.175	0.146
2.578	110	0.384	0.346	0.307	0.269	0.230	0.192

An instrument which is rather new in the market but which is giving good satisfaction in lumber dry kilns is the recording wet and dry bulb thermometer. An auxiliary attachment is furnished for automatically and continuously moistening the wet bulb. The recorder and water supply bottle are installed outside. The recorder registers the relative humidity continuously. This is very advantageous in that it serves to let one know how constant the relative humidity in the dryer is.

Another form of the hygrometer is the psychrometer which consists of a wet and dry bulb thermometer mounted upon a swivel. By whirling these thermometers around in the atmosphere in which the relative humidity is to be determined, both accurate and rapid readings may be obtained. Then by referring to charts or tables the degree of saturation can readily be learned.

LOWER TEMPERATURE MEANS SLOWER DRYING

Now, we come to the third important factor in drying clay ware, that of temperature. As said before, the higher the temperature of the air the greater the carrying capacity for water and also the faster the rate of evaporation. Also, drying takes place more rapidly the higher the temperature with the same relative humidity. But in drying clay ware most clays can only be dried safely at a certain temperature and rate as a maximum; above this certain temperature the ware is liable to crack while below this point the temperature of the gases is too low and the rate of drying will be exceedingly slow.

If it is found under certain atmospherical and draft conditions that a dryer will dry clay ware safely in twenty-four hours when a temperature of entering air at 300 deg. Fahr. is maintained, it is quite certain that if the temperature of entering air drops down to 225 deg. Fahr. that the ware will not be completely dried in the same amount of time. This means either that the kiln will have to be held up until the brick are dry enough to set, or that the brick will have to be taken out of the dryer in a moist condition and set in the kiln. The result of setting brick that are moist is well known. Troubles such as slow watersmoking, scummed brick, kiln marked and soft brick, poor regulation of draft conditions are often met with under such conditions. To maintain the dryer gases at a proper and constant temperature, which will insure maximum dryer capacity and consistent results, we should use a thermometer of some type. A good place to locate the thermometer is right at the fan which forces the air into the dryer or at the waste heat flue which conducts the gases from the fan to the dryer tunnels.

It is well to keep in mind that in waste heat drying a high efficiency results from a high initial temperature, because:

1. High temperature means less weight of gases to be driven by the fan.
2. High temperature means less volume in terms of exhaust conditions.
3. Less volume and lower exit conditions means more complete saturation.
4. More complete saturation at entrance conditions means safer drying of the ware.

PRINCIPLE OF RECORDING THERMOMETER

The best instrument to use for measuring the temperature is some form of the recording thermometer. These instruments usually contain a metallic bulb filled with some volatile fluid which upon being heated volatilizes and exerts a pressure upon a diaphragm which communicates this pressure to a recorder. The amount of pressure which a gas exerts in a confined vessel is of course directly proportional to its absolute temperature, hence, temperature readings may readily be obtained from the gas pressure. The instrument is always calibrated to read directly in temperatures.

A chart is placed upon dial of the recorder each day and the temperatures are then continuously and automatically registered. By having the temperatures recorded in this manner it can be seen whether the men are following out instructions; experimenting can be easily done; a written record of efficient plant operation is obtained, and it can be decided at a glance whether or not the temperature in the dryer is the cause for any cracking or other troubles in drying.

In a steam dryer where the temperature of the steam is very likely to change during the night a recording thermometer is of special value. In fact, a recording thermometer is the only means of ascertaining how uniform the temperature in a steam dryer is kept.

To review the points gone over in this article one can easily see that to operate a dryer in the most efficient and scientific manner, the speed of the gases passing thru the dryer must be within certain limits, the relative humidity of the gases at the exhaust end of the dryer should have certain values at all times, and the temperature of the gases must be of a certain degree and constantly uniform. The only way to know that these values are being maintained in the regulation of the dryer is to measure them with the aid of some of the instruments described above.

◆ ◆ ◆

BUILDING INDUSTRY AWAKENS *in* N. Y.

PROMINENT BUILDING FINANCIERS who have been watching for the first actual signs of an improvement in real estate and building conditions publicly state their belief that the turn for the better has come says The Dow Service Daily Building Reports.

Louis V. Bright, president of the Lawyers Title and Trust Co., when asked why he inserted display advertisements in the newspapers calling the attention of the public to the change for the better in basic conditions affecting real estate and building, said:

"Let's look about us. No. 42 Broadway has turned over, the Stewart Building, one of the choicest bargains of the day has been taken up by Mr. Munsey for improvement and all over the city the big leaders in building investment are finding and taking up opportunities they have been waiting for since 1906. All that explains why permanent investors are picking up the bargains releasing your responsible speculative builders to take care of this new demand for building of various kind. All this convinces me that the outlook in October is brighter than it has been in some time."

Walter Lindner, solicitor for the Title Guarantee and Trust Co., has been impressed with the trend of realty and construction for the better. He said his company is now giving consideration to meritorious propositions. He has been waiting for some assurance that building material market prices would find their level and now that that fact has been officially cleared he looks toward the future, not with the expectation of a boom in building construction, but with confidence that a start has been made in the direction of safe and sane construction.

Walter Stabler, comptroller of the Metropolitan Life Insurance Co., a dominant factor in the lending market as applied to building construction, thinks it will be a long time, possibly never, when there will be an indiscriminate building boom in New York like that of recent memory. The lending companies have learned a lesson, he believes, adding:

"Real estate never before in my memory has been so well rented as it is now. This includes all kinds of building operations. All lenders of money, however, are beginning to realize that the building of the future is going to be done on a very much more conservative basis. We never want to have a condition of over-production of rentable space like that which has existed in this city at times during the last five or ten years.

"In addition to all this the zoning law is already making for a condition of stability in realty values and basic building conditions that cannot be changed over night."

Coincident with the general return of confidence and assurance of better things for building construction there is reported in the current quotations this week lower prices on certain construction metals. Blue sheets have passed out of a price range into a flat quotation of half a cent a pound lower than last week. The same is true of galvanized sheets. Lead has been changed from a range in price to a fixed level; instead of being quoted at nine to ten cents it is now quoted at nine and a half cents. Bar lead has been reduced from eleven and twelve cents to ten and a half and eleven cents. Radiators have also been reduced about ten per cent. Expected changes in the price of metal lath have not been reported and it is now practically assured that the change upward will not take place.

By way of confirmation of the official report on the condition of mill supply, demand and price of basic building materials made to the Committee on Alleviation of Building Stagnation last week, one department in the building material market reports an increase this week. Figured, rolled and wired glass have been advanced about 7.5 per cent. due to shortage of supply of natural gas, higher cost of fuel and labor and wood for shipping containers.

The improvement in general building conditions is not visionary, but actual; the case of the Brooklyn building department's filing room is illustrative of the trend for the better. On Tuesday, Wednesday, and Thursday of last week the clerks were rushed with incoming new building and alteration plans as they have not been in the last four months. In the offices of many architects in Manhattan work that has been abandoned or "indefinitely postponed" were revived and reported to the builders for new estimates in the last few weeks.

Still another item, that of shortage of labor, presented a clearer horizon because assurances were given that within a few weeks the men who rallied to the nation's call for workers at Yaphank, Wrightstown, and other camps, will begin to return to the city.

Exactly one month has elapsed since C. J. Curtin, President Elliott Smith, Walter C. Shultz, of Hoboken; George A. Molitor, and Allen E. Beals, of The Dow Service Daily Building Reports, conferred with Borough President Marcus M. Marks on the subject of taking steps to remove the misconceptions with relation to the demand and expected drop in the cost of building materials.

The selection by Mr. Marks of the biggest men in their line contributing to real estate and building construction in this market for his committee of investigation and the complete transition from depression and inaction to confidence and activity has resulted in the decision to make of the general committee an organization of Realty and Construction Minute Men, subject to the call of President Smith, to take up and administer corrective measures whenever conditions menacing the real estate and building market of New York warrant the kind of work that has just been done.

⁂

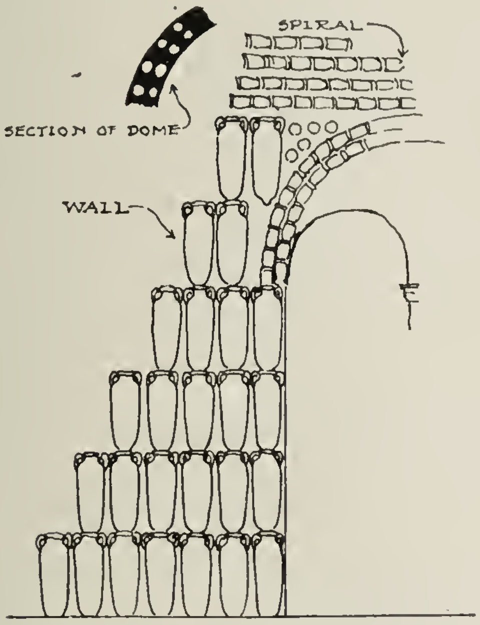
The delegates at the convention of the American Institute of Mining Engineers were recently taken thru the plants of the Laclede-Christy Clay Products Co. and the Evens and Howard Fire Brick Co., St. Louis, Mo., on an inspection trip.

HOLLOW TILE WALLS *of the* ANCIENTS

Ruins Left as Heritages From Past Ages Display Use of Hollow Tile as Building Material Over 2,000 Years Ago

By Harold V. Walsh

IT IS INTERESTING to note how similar the modern method of hollow tile construction is to that employed centuries ago by the ancients. The idea of a fireproof wall built of burned clay hollow tile was conceived by the Romans more than 2,000 years ago and their employment of this building material is shown in numerous ruins which are left as heritages from past ages.



BYZANTINE HOLLOW TILE CONSTRUCTION—S. VITALE, RAVENNA

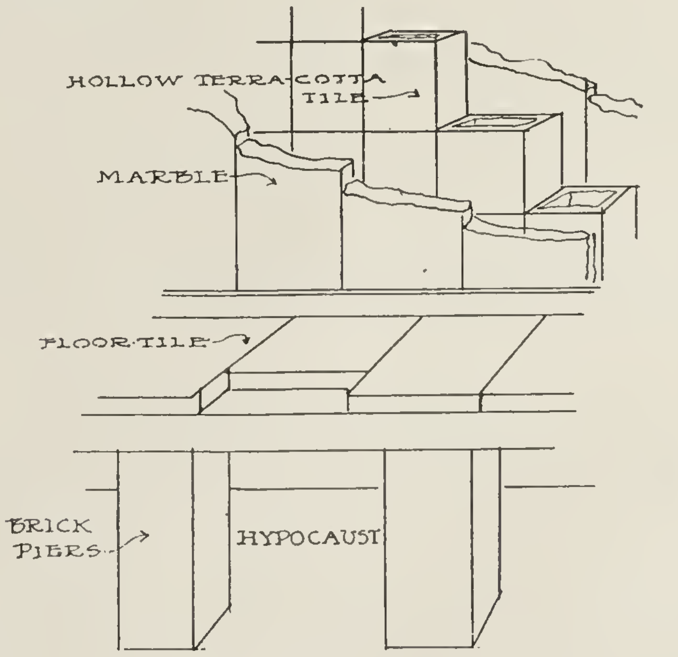
Hollow Tile in the Form of Vases Were Used in the Construction of Domes in the Fifteenth Century. A Good Example of This Type of Construction is That Which was Used in the Dome of the Church of Saint Vitale at Ravenna, Italy.

The great baths or Thermae, monuments of engineering and architectural skill, show evidence of the use of hollow tile construction for fireproof work. The hot rooms, or Callidarium, of these baths offered a heating problem entirely new to the Roman engineers. It was necessary to raise the temperature in these rooms to a high degree without bringing the fire in direct contact with the air of the room or in any way endangering the building. There were no systems of steam pipes, but the walls of the rooms were built of hollow tile flues to act as hot air pipes for the flames and heat of the fires that were built underneath the floor by the slaves, consequently being continuously exposed to the direct flames of the fire. At first metal flues were used, such as lead and brass, but these soon proved very unsatisfactory; it required the fireproof qualities of the hollow terra cotta, or burned clay, tile to resist the constant high temperatures, and blocks were made of it for wall building purposes like those shown in one of the drawings.

In the ruins of the baths of Caracalla, at Rome, these hollow tile walls can be seen. The tile were approximately twelve inches square, and served as flues on the inside. They were built in a continuous wall and laid up to form an outlet for the smoke and hot air of the fires which were built below the hot room. On the outside the tile were veneered with this marble, used to enhance the beauty of the structure. As was the case with the baths of Thermae, when the room was to be heated the fires were built in the subcellar, which was about five feet high and which was called the hypocaust. Considerable heat was generated by the wood used as the fuel. The walls of the hypocaust soon warmed up to a high temperature, raising the temperature of the room to the desired degree of heat for some fat Roman politician to sweat off his surplus avoirdupois.

BYZANTINE USE OF HOLLOW TILE

Another interesting example of the use of hollow tile in the construction of the ancient structures can be seen in some of the Byzantine works, where the use of hollow tile arose from the need of a light and sound proof material rather than one with fireproof qualities. This hollow tile construction was used for domes and was developed during the fifteenth century. The hollow tile were chiefly in the form of vases.

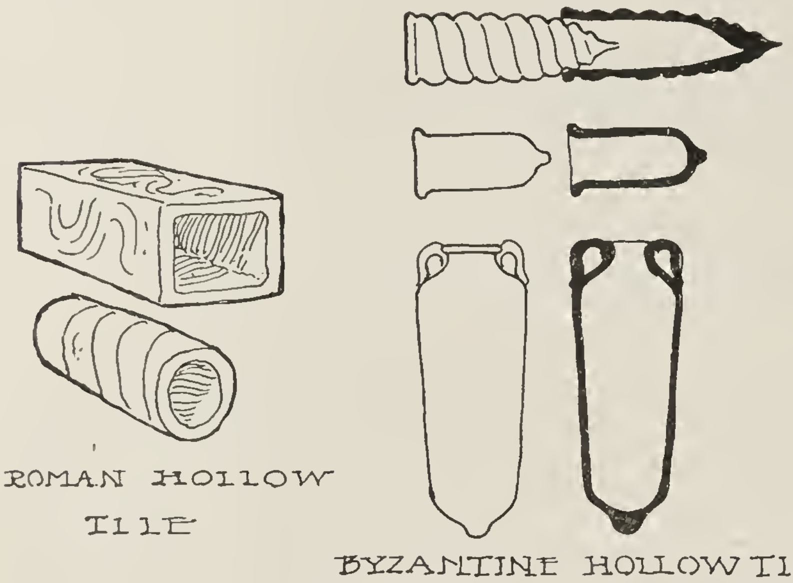


SHOWING THE HOLLOW TILE IN THE ROMAN THERMAE.

The Tile Bathroom is Far from Being a Recent Development. Witness the Tile Construction of the Ancient Baths of Caracalla, Rome. The Wall Tile Also Served as Flues for the Fires Below and Solved the Problem of Heating the Room.

One of the best examples of this method of construction is found in the dome of the church of Saint Vitale and the Baptistery at Ravenna, Italy. The walls at the base of the dome were built of burned clay hollow tile in the form of jars or urns, which tapered at the end and fitted into the mouth of the one below. These were arranged in tiers and covered with cement. The dome itself consists of a spiral of urns each fitting into the other, and gradually winding in and up to the top, the whole being covered with cement and veneered with mosaic.

In the earlier investigation of this dome it was thought that the surface of the jars were shaped in a spiral form for the purpose of screwing one into another. This is not the case, however; the spiral grooves on the surface of the pottery which gave rise to this theory were merely for the purpose of holding the cement covering better. One of the illustrations shows how these tiles were shaped. The tubes are about six to seven inches long and two to three inches in diameter.



Examples of These Old Style Roman Hollow Tile or Terra Cotta Can Still Be Seen in Use in the Buildings of Syria, Today.

It is believed that the dome of St. Satiro and St. Ambrosio at Milan, the baptistery of St. John, at Ravenna, and St. Stefano, at Rome, are built of hollow terra-cotta urns.

This curious construction is still in use in Syria today, but slightly different in character in that the vases are split and placed like voussiors instead of spirals. In the region of Jerusalem and Jaffa the method was popular, because these walls offered the best protection against the extremes of the weather.

Altho our modern methods of hollow tile construction are distinctly new, yet the idea of such a building material is very ancient. The curious vase construction might yet have in it an inspiration for some American inventor to develop the tile along a different system than that which we are at present employing.

* * *

Pacific Coast Building Shows Gains

In view of the strikes which tied up some important industries in the San Francisco Bay district more or less during the past month and caused a general unrest in labor which was felt to a considerable extent in all construction work and business generally, the manufacturers of brick and allied lines have few complaints to make. Despite the unsettled conditions, building in that city makes a very good comparison with the corresponding period of last year. For the month of September the total valuation of building permits issued in San Francisco amounted to $1,137,685, against $1,263,485 for the same month a year ago. As compared with August of this year, the falling off was only about $80,000. The brick people are optimistic for the most part that October will make a little better showing, and that the situation will improve steadily from now on. While most of the other large Coast cities did not make so good a showing in building as did San Francisco during the past month, Seattle and Sacramento did even better. In Seattle the total of building permits for September reached $696,179, a considerable gain over the same month of last year and a decided improvement over the preceding month of this year.

Sacramento showed a nice gain over September of last year but exhibited a falling off as compared with August this year. In Oakland the September permits amounted to only $195,761, the lowest figure in over three years. Los Angeles also experienced a slump, work for the month amounting to only $613,865, as compared with $913,143 for September, 1916, and $891,485 for August this year. Portland's average dropped also, being over a million dollars below the corresponding month of last year, which, however, is hardly a fair comparison, considering that September, 1916, was by far the best month in the city's building operations since December, 1915.

* * *

Ohio Coal Situation Grows More Acute

The cheerful admonition that the Cleveland public "must hope for the best and be prepared for the worst" was the first statement of Homer H. Johnson, Ohio coal administrator, chosen last week by Harry A. Garfield, national coal administrator, following his appointment by the chief fuel adjustor. Garfield came here to confer with the coal committee of the Cleveland Chamber of Commerce, and while they talked Cleveland industries were running on an hour-to-hour fuel supply, three schools were closed, and domestic requirements were unfilled. Whether any hope can be held out for the manufacturing concerns of the district, seems doubtful in view of the statement of Garfield, in which he said that he would "not promise a normal coal supply for Cleveland," and that "after the requirements of the army and navy have been met in the matter of coal, domestic consumers and schools will be given preference. Industries that are not essential may be deprived of coal."

The only immediate relief seen is the appointment of 20 per cent. of all the coal mined in Ohio to Ohio consumers. The order for this relief came direct from Washington. First relief day was for October 16. Other relief days may be provided, according to Johnson. It was also hinted that Pennsylvania and West Virginia coal may be used for Ohio requirements.

* * *

Ship Paving Brick to France

The Mack Manufacturing Co., Wheeling, W. Va., has shipped a carload of paving brick to France. This is one of the first shipments of its kind to leave this district. The brick, crated, will be received by the expeditionary force and used for refrigerating purposes. They were crated in 45-inch crates, three rows, fifteen to a row. The brick were ordered instead of any other material because of their impervious qualities to moisture. The deal was executed thru the efforts of R. T. Hutchins, secretary and sales manager of the Mack company.

* * *

The distinction of being the first woman president of a Building and Loan Association in the United States has fallen to Miss Ann E. Rea, who is the executive officer of the Niagara Falls Society, which in proportion to population is the third largest association in the state of N. Y.

MODERN CLAY TESTING

The Second Half of an Intensely Interesting and Exhaustive Article on the Subject of Clay Testing for Properties and Uses, Written by a Man Whose Experience Qualifies Him to Speak

By Arthur E. Williams

Associate Ceramic Chemist, U. S. Bureau of Standards,
Pittsburgh, Pa.

In Last Issue

"Modern Clay Testing" covered the general subject of testing. It enumerated the most general purposes for which clays are tested and told what properties of a clay are revealed by testing. It explained in detail the methods used in making the tests, and, in describing the properties revealed in the burning test, dropped a few good points on burning. It closed with a description of the absorption test, the properties which it reveals, and the relation of porosity to a commercially possible clay.

In This Issue

is published a set of absorption curves which show at a glance the burning behavior of different classes of clays—the most important property of a clay. This last half of Mr. Williams' valuable article also describes the tests which clays, to be used for various purposes, must stand.

If you neglected to read the first half of "Modern Clay Testing," dig it up and go thru it now; and when you've finished that your appetite will be whetted for the final consumption of this section.

THE FOLLOWING is a brief statement of what tests clay, to be used for various purposes, should stand:

PAPER FILLERS

A clay to be used for purposes of paper filler must be free from grit and very fine grained. Its color is an important factor and depends largely upon the color of the paper to be manufactured. Clays which are especially white are very desirable. In this case, however, it is not the burning color which is important, but its color in the raw state.

CLAYS FOR WHITE WARE AND PORCELAIN

The kaolins which make up the skeleton of such a body must have as a chief requisite a good white color, in fact their value for this purpose is based chiefly on their color. It should be refractory enough to hold its shape at cone 16, showing a porosity not lower than 10 per cent. at this temperature. As pure kaolins represent the most refractory clay we have, they usually do not show a porosity less than 20 per cent. at cone 12. The drying shrinkage of a suitable kaolin should be less than 5 per cent., the burning shrinkage at cone 12 should not be greater than 5 per cent.

The ball clays which form the bond of a porcelain or white ware body do not as a rule burn white. They may show more or less of a buff color when vitrified and still be satisfactory. However, the less color they show the better. Ball clays, giving satisfaction, have considerable strength in the dry state, having a modulus of rupture between 350 and 500 lbs. per sq. in. The drying shrinkage should be less than 8 per cent. These clays should vitrify to a minimum porosity between 0 and 2 per cent. when burned to cone 10, and have a vitrification range extending over about 5 cones, or 100 deg. Cent. (212 deg. Fahr.), also burning shrinkage should be less than 8 per cent.

TERRA COTTA CLAYS

Terra cotta bodies should have a low drying and burning shrinkage. They are made up of mixtures of calcined non-plastic material bound together with a plastic bond. The non-plastic material or grog is usually made by burning the bond clays. The calcined material should be of a yellow burning clay vitrifying to about 5 per cent. porosity between cones 5 and 9. The bond clays usually of the same material are quite similar in character, and should burn to a yellow color free from black specks due to iron particles. They should also vitrify to at least 7 per cent. porosity between cones 5 and 9. The drying shrinkage should not exceed 5 per cent., and the burning shrinkage should not exceed 7 per cent. It is especially important that these materials do not contain any soluble salts, as any tendency to whitewash prevents the glaze from properly adhering to the body.

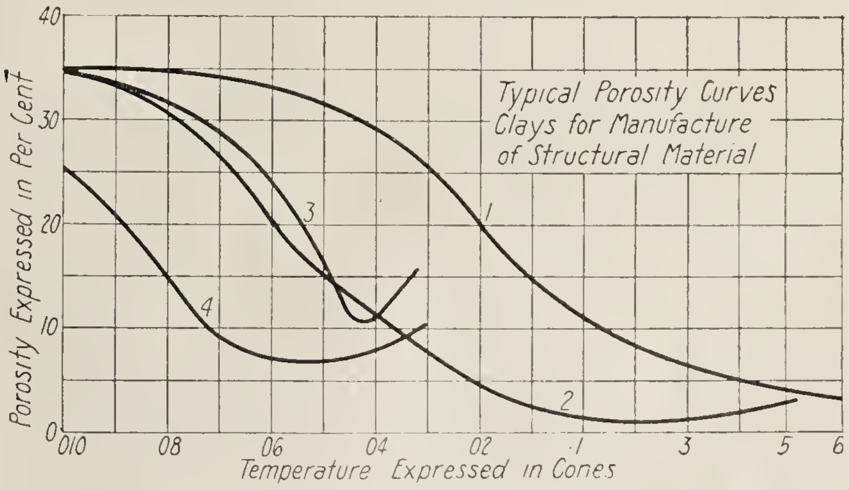


Fig. 1. By Studying These Porosity Curves and Comparing With Them the Burning Behavior of One's Own Clay, It Can Readily Be Determined for What Products the Clay Is Best Suited.

REFRACTORY CLAYS

Refractory clays to be used as non-plastics or flint clays need be tested chiefly for the softening point, which should be above cone 30. If these clays show a high fire shrinkage, i. e., above 7 per cent. at cone 15, they should be calcined before being used. It is, therefore, desirable to determine their burning shrinkage. The porosity shown by this class of clays should be greater than 20 per cent. when burned to cone 15.

PLASTIC CLAYS

Plastic clays for refractories should be tested for various properties. They should not melt below cone 28. If used for crucibles, they should have a modulus or rupture of 400 lbs. when mixed with 50 per cent. sand. If they are to be used for the manufacture of brick or refractory block, their modulus of rupture should not be less than 200 lbs. when mixed with 50 per cent. non-plastics. These clays should have a porosity below 5 per cent. when burned between cone 12 and 15. It is desirable, in the case of glass pots, to have a more refractory clay showing a porosity of about 8 to 10 per cent. at cone 15. In any case, these clays should have a long vitrification range and in the case of crucibles burn very dense. The burning shrinkage may vary from 5 to 8 per cent. It should not exceed the higher limit. The chemical analysis of these clays should show a percentage, total fluxes including Fe_2O_3, CaO, MgO, K_2O, Na_2O, not to exceed 5 per cent. and in the case of glass refractories, they should not exceed 4 per cent.

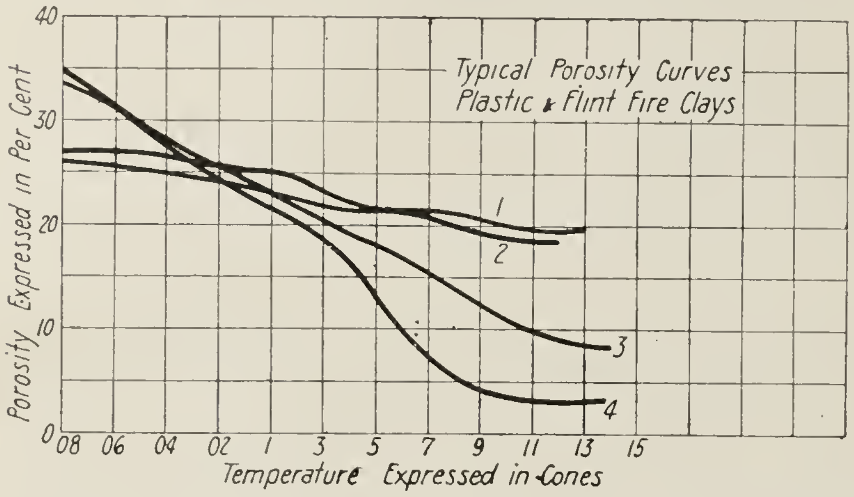


Fig. 2. These Curves Show the Effect of Temperature on the Porosity of Some Typical Fire Clays. Note the Difference Between the Porosity of the Typical Flint Fire Clay With That of the Plastic Fire Clay.

BRICK AND TILE CLAYS

The important tests of brick clays depend a great deal on the quality of the product desired. If a paving brick, the clay should burn to a dense body of less than 3 per cent. porosity. It should have a long vitrification range, not overburning within 4 cones or 80 deg. Cent. (176 deg. Fahr.) of the point where it reaches its lowest porosity, and then not overburning rapidly. It may burn either red or buff color, and should dry easily. High grade sewer pipe clays should stand the same tests as paving brick clays, with the additional property of taking a salt glaze well. Face brick clays need not burn so dense, but should flash easily to brown and black colors and be free from scumming.

Clays for common brick need not burn to an especially clear color, nor to a dense body. Clays containing a considerable proportion of lime and overburning rapidly may be used for the manufacture of common brick, where they may be burned to a temperature below the danger point, and where they will also be still quite porous. If porous fireproofing or drain tile are to be made, this same type of clay may be used.

In the case of vitrified tile and hollow blocks to be used for foundations or silos, a clay burning to a denser body is necessary. In general, it may be said that surface clays of the Central States do not produce a high quality of ware, whereas a large proportion of the shales produce a very good quality of ware. It may be said that it is not desirable to establish a new enterprise in the clay business with a clay suitable for a limited product. Clays which have properties suitable for the manufacture of several classes of material gives a new enterprise every chance for success.

The curves shown herewith illustrate changes in porosity with increasing temperature shown by clays suitable for various purposes.

Curve No. 1, Fig. 1, is an example of what might be called an ideal rate of change in porosity of a shale or clay suitable for making tough, hard burned materials, such as paving brick, sewer pipe, foundation blocks, etc.

A clay showing such a curve would be considered quite refractory for shales. It would have a long vitrification range without evidences of overburning, and would produce a dense body; it is typical of clays suitable for paving brick.

Curve No. 2, Fig. 1, also represents a clay suitable for burning densely vitrified ware, altho this clay burns denser than the clay represented on curve No. 1, the latter would probably show a greater degree of toughness. This clay would be very suitable for making vitrified building brick, sewer pipe, or hollow ware, but rather doubtful for use as a paving brick material.

Curve No. 3, Fig. 1, represents a clay suitable but for the purpose of making porous material, such as hollow partition tile or very soft porous brick. The sudden rise in the curve represents an increase in porosity due to overburning. When this condition occurs in a kiln the clay is soft enough to deform under load and pitching, kiln-marking, rolling, stuck ware, etc., occur. This condition takes place so rapidly when the critical temperature is reached that it is necessary to keep the heat considerably below that temperature to avoid trouble, consequently nothing but a porous soft burned product is safe to manufacture.

Curve No. 4, Fig. 1, represents a clay suitable to produce hard-building brick, face brick, drain tile, or hollow blocks. It is a clay which matures at a low temperature and consequently would require less fuel for burning than clays represented by curves No. 1 and No. 2.

The curves shown in Fig. 2 represent typical porosity curves of flint and plastic fire clays. It will be noted that the plastic fire clays (curves 3 and 4), tend to burn dense at low temperatures when compared to the flint fire clays (curves 1 and 2), which do not show signs of vitrification until heated to a temperature close to their melting point, cones 30 to 35.

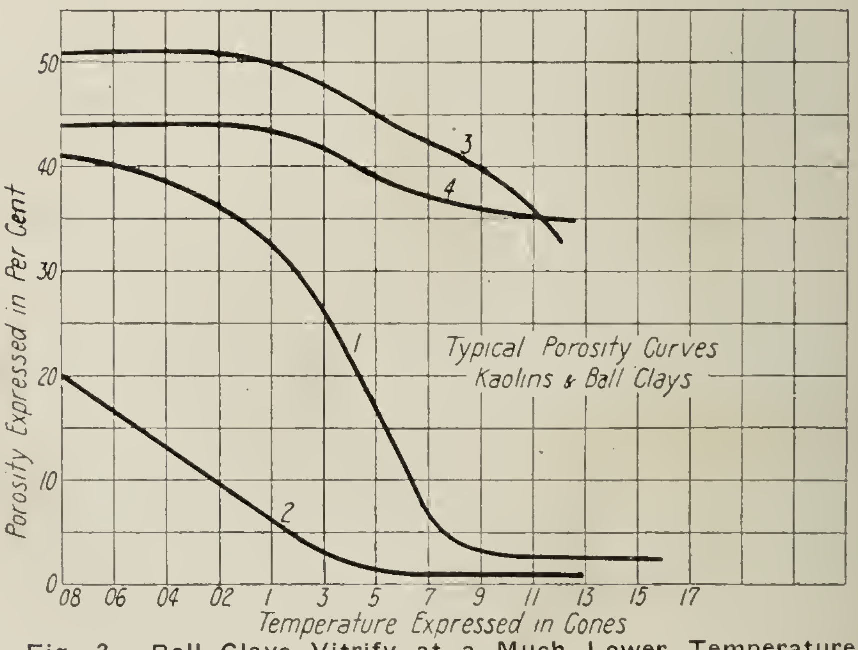


Fig. 3. Ball Clays Vitrify at a Much Lower Temperature Than Do Kaolins, as Is Shown by These Typical Curves of That Type of Clay. Note the Similarity of the Kaolin and Flint Fire Clay and Also of the Ball Clay and Plastic Fire Clay.

Figure 3 shows curves illustrating the changes in porosity with temperature of ball clays and kaolins. Attention is called to the low temperature at which the ball clays, curves

1 and 2, vitrify, as compared to the kaolins (curves 3 and 4), showing a characteristic similar to the plastic and non plastic fire clays.

* * *

Take It or Leave It

Gustaf Englebrekt, of Superior, Wis., said to be an inventive genius who has figured in the improvement of chemical processes and upon whose head rests laurels for having invented new electrical and mechanical devices, puts forth the claim of having perfected a method of manufacturing fuel out of clay—from clay mined in Douglas County, Wis., or any other part of the globe. In a demonstration held recently before a handful of Superior business men, with eight pounds of new fuel and two or three pounds of wood it is said that he kindled a blaze which developed steam in a small boiler in seventeen minutes.

The new fuel depends for its heat producing qualities on the aluminum constituent of clays. After being treated chemically it is said that sawdust is mixed with the clay and the composition molded into convenient shapes. Mr. Engelbrekt states that the new fuel can be produced commercially at a low figure and when burned it develops no cinders.

All of which information comes from a clipping of an item appearing in the "Superior Telegram" the early part of September. Take it or leave it.

* * *

New Ruling Made On Car Orders

Traffic troubles received another jolt so far as the shipper is concerned when a new rule went into effect on October 1, under which the life of a car order is limited to twenty-four hours. Under the new ruling of the Car Service Commission the carrier kills all orders for cars that can't be filled within twenty-four hours, and shippers have to place fresh requisitions at the end of that time for all cars not delivered. This means that the burden of taking care of car orders has been switched from the shoulders of the carrier to those of the shipper. However, there are some good angles in this change, and angles that are well worth considering. For instance, under the old policy, the shipper would place orders for more cars than he needed in an effort to some time, somehow, get his requirements. For instance, if the shipper needed ten cars, and had two lines entering that could handle the shipments, he would probably place orders for ten cars with each line, and in this way figure upon getting a total of ten cars. However, this placed a false figure on the actual cars required to handle shipments in any given district, and the carriers have never been able to figure even approximately how many cars were needed. Under the new regulations the carrier has only twenty-four-hour deliveries to figure with, and the priority car order claim is a thing of the past. This may make it hard on some shippers for a time, but some of the traffic experts believe that it will improve conditions materially.

* * *

Housewife and Fireman: Save the Coal!

Talking to a representative gathering of men who are to assist the Fuel Administration in the different states, at their meeting in Washington with Dr. H. A. Garfield, Van H. Manning, director of the Bureau of Mines, Department of the Interior said concerning the necessity of urging the economical use of fuels:

"The economical use of fuel has proved to be no simple problem. The coal, the equipment, and the human variables make hard and fast general rules impossible. The Bureau of Mines has carried on extensive experiments to determine the fundamental principles of the combustion process and of furnace design, and, at the same time has been making practical application of improved practice in government power plants.

"Americans have been as wasteful of coal as of other resources, largely because coal has been abundant. To many consumers it has seemed hardly worth while to give time and thought to the saving of coal.

"Conditions have suddenly changed. Today it is everybody's business to save coal. Coal is the foundation stone of industry. Without it the production of equipment for war must halt. Transportation facilities must stand still. One man's careless and wasteful use may mean an idle factory or a cold house for his neighbor. With the world looking to us largely for its coal supply, with increased demands at home, with a scarcity of available labor, with overtaxed transportation facilities, the consumer of coal must pause and give serious consideration to the problem which confronts the country

"If the consumers can be aroused to an intelligent consideration of the burning of coal, they can begin to save ten per cent. of the production (600,000,000), at once. With more effort, thru instruction and a moderate remodeling of coal burning equipment, which could all be accomplished during the war, a further considerable saving can be made. The possible coal saving when present practice is compared with the best ideal practice, is very large. If it were possible to supply the need of this country for light, heat, and power thru the highest type of mechanical devices, and if we could make a skilled coal user out of the average user, we could probably get along with half as much coal as we are now consuming. This ideal is far beyond present realization.

"The immediate problem is a difficult one. We cannot scrap all out-of-date power plants. We must start by doing the best with what we have. We must begin saving coal at once. The problem is personal. It deals with the human element. We must reach the man with the shovel.

"About fifteen *million* people shovel the twenty per cent. of our coal used for domestic purposes. Only about two hundred and fifty *thousand* firemen shovel the sixty-odd per cent. of our coal used by power plants and railroads. While we must appeal to the householder to save coal it is vastly more important to reach the fireman thru whose hands the larger part of our coal passes.

"The householder must realize that when he throws a shovelful of anthracite coal into his furnace its value is equivalent to half a pound of sugar, or half a loaf of bread, or a pint of milk. He must appreciate that it is worth while to examine his house and to overhaul his heating equipment. Weather strips, double windows, pipe coverings, clean flues and chimneys, and tight fittings in ash-pit, doors, dampers and furnace parts will all pay. Damper control is one of the chief secrets of economical heating. Clean surfaces are most essential, *as soot is a poorer conductor of heat than asbestos.* Care, attention, and taking pains will be the greatest factors in saving domestic coal.

EDUCATE THE FIREMEN TO SAVE COAL

"The fireman is, however, the biggest single factor to be considered in a campaign to secure the largest saving of coal. Many manufacturers have made a serious mistake in failing to consider the fireman as a skilled worker. Too often he is treated as a roustabout. He is not well instructed nor given proper labor saving devices. As coal increases in price, or becomes difficult to get, the fireman handles more and more of his employer's money. His efficiency means more in dollars and cents. This is an encouraging feature in the situation. It means a better recognition of the importance of the fireman, more efficient work on his part, and a consequent increased saving of coal. The view point is changing. It is no longer cheaper to pay for the coal than to educate the firemen.

"In carrying out a campaign to promote the saving of coal, let the appeal be made to the householder to cut down his consumption in every way possible, but above all, give serious consideration to methods by which a systematic relationship may be established between the office and the fireman. Encourage the manufacturer to take a keener interest in his fuel consumption and to back up his fireman by giving him the best information and equipment available. This problem has two phases; first, to arouse the interest of the manufacturer and his engineer and fireman and to point out the part which they can play in relieving the present crisis in coal supply and, second, to furnish whatever technical information may be desirable and which will be immediately applicable to accomplish the result sought.

Ohio Building Show Gaining Impetus

Plans are now being prepared for a General Building Conference to be held in Columbus in connection with the Real Estate and Building Show, January 21 to 30, 1918, at the Ohio State Fair Grounds in Columbus.

The Ohio Builders' Supply Dealers' Association, Ohio Retail Lumber Dealers' Association, Agricultural Lime and Limestone Association, and the Union Association of Sash and Door Salesmen have already decided upon dates within those stated above for their conventions in order to participate in the conference, assuring a total attendance to date of 2,200. Other associations are giving favorable attention to these dates in calling their conventions to Columbus, and some will call special meetings at that time.

About forty per cent. of the available 53,300 square feet of exhibit space in the Building Show were sold during the first week after the sale opened. J. E. McNally, president of the Columbus Builders' and Traders' Exchange, is president of the Building Show; Chas. F. Johnson, president of the Columbus Real Estate Board, is first vice-president; Wm. H. Conklin and F. O. Schoedinger, both former presidents of the Builders' Exchange, are second vice-president and treasurer, respectively, and Sam F. Neff is secretary.

◆ ◆ ◆

CERAMIC PRODUCTS "INTRODUCED"

AT THE THIRD National Exposition of Chemical Industries, held at the Grand Central Palace, New York City, during the week beginning September 24, the American Ceramic Society was represented by booth space and also by a part in the program of papers.

Visitors to the Society's booth were surprised at the extent and importance of the ceramic field as covered under the present meaning of the term "Ceramics." The value of the ceramic industries or silicate industries (clay, glass and cement), for 1914 was about $400,000,000, which compares very favorably with the value of products of other big industries. The value of electrical machinery turned out in the same year, for instance, was about $335,000,000 and the value of the chemical industries (Chemicals, explosives, acids, paints and varnishes, fertilizers, dyestuffs and extracts, essential oils, bone, carbon and lamp black, etc.), was about $550,000,000. This value of the ceramic products for the year indicated does not include the value of enameled metal ware which is ceramic work just as much as the celebrated Cloisonné ware of the Japanese art.

Ordinarily this extent in value of the ceramic industrial field is not appreciated, but one only has to stop and consider for a moment to realize the degree to which human comfort is daily dependent upon ceramic products, from the time of bathing in a porcelain tub in the morning, to turning off at night the electric lamp in which porcelain insulates the wires and connections. The china on our tables, tiles on the walls and floors, brick and terra cotta in buildings, vases and other ornaments for the home, sewer pipe, conduits, brick for streets and walks, concrete construction for city comfort and sanitation, glass in windows, skylights, kitchen ware, stove and furnace linings, etc., indicate the part played by ceramic products in every-day comfort.

In industrial work ceramic products are of considerable importance. Porcelain aids in the transmission of electrical energy at high voltages and clay conduits carry telephone and telegraph wires underground in city construction. Porcelain and glass are of great value in chemical laboratories and pyrometry. Fire-clay retorts and crucibles are a very necessary part of metallurgical work and refractories have aided considerably in the development of industrial furnace work.

The value of drain tile to the farmer is well known.

This vast field of manufacture is based upon a clearly defined set of engineering principles. Ceramic engineering is that branch of engineering devoted to the study of the production of ceramic or silicate products and the American Ceramic Society is the technical organization in which men interested or engaged in ceramic work cooperate for the general advancement of the science, for the development of engineering skill, and for the printing and circulation of professional papers.

The representation of the American Ceramic Society at the Chemical Exposition was so successful that it lead to the creation of a committee to take charge of representation at the fourth exposition, to be held in September, 1918. At the fourth exposition there will be a ceramic section in which exhibitors of ceramic products will display their wares and in this section the American Ceramic Society will again have a booth and an exhibit to show the extent and importance of the ceramic industries, and particularly the accomplishments of the American Ceramic Society in the fields of engineering and manufacturing.

At the present time the American Ceramic Society is conducting a membership campaign by which it is hoped to double the membership by the time of the next convention in February, 1918, and to treble the membership by the time of the Fourth Chemical Exposition in September, 1918. Any one engaged or interested in the production of ceramic products should by all means possess a membership in the American Ceramic Society.

KNOCKING *vs.* BOOSTING

Juggling the Words of Our Friend Webster, a Competitor May Be Either a "Rival" or a "Copartner." Upon Your Interpretation of the Term Rests the Security of Your Business.

By Otto C. Bauer
Hydraulic-Press Brick Co.,
Minneapolis, Minn.

WE MUST ALL ADMIT that this subject is extremely interesting, especially in this age of business co-operation, and that "knocking" never did harmonize with co-operation. Were you ever in a situation where the temptation did not come to you to "knock" your competitor just a little, knowing that it was wrong for you to do so, but feeling at the same time that you had a slight edge upon which to work, by depreciating the value of the commodity offered by your competitor. We must all agree that this attempt to depreciate a competitor's products is an old-time method, and has no place in the present plan of co-operation and fairness.

It would seem that the first important step is to eliminate the word "competitor" as applying to the person who may be in the same line of human endeavor as yourself. Webster's dictionary tells us that a competitor is a rival; rivalry is emulation; and emulation means contention and strife. And here you have the first thought which is father to the "knock." Going a little further, however, with Webster, we find that he also defines the word "competitor" as "a co-partner." Then why not think of our so-called competitor in the latter sense. Let's name him something else besides a competitor. Let's call him co-partner.

Then the next step is to become better acquainted with him. You will find your co-partner a very human sort of individual, with the same hopes and ambitions as yourself, with a couple of babies at home, perhaps, that he would rather talk about—if you would only permit him to do so—than knock you or your products. You may be agreeably surprised to find that you actually like him, that you enjoy his association, that he has ideas which he can give you that would be of mutual benefit.

Now comes confidence. It is not human nature to have confidence in some one you do not know, so there is your reason for becoming acquainted, and by this is meant not merely knowing him by sight and by name, but to be friends in every sense of the word. Is it not best to think of your competitor in this way?

DRIVING AWAY BUSINESS

Looking at the subject from a purely business standpoint, is there any reason why the Golden Rule is not applicable to our business life. Can we imagine that we will secure any more business by "knocking" our competitor's business and he in turn "knocking" ours. Will this method of "knocking" increase the number of brick buildings to be constructed? Quite to the contrary. For example, a salesman talking to a prospective buyer in the forenoon, may tell him that such a competitor's brick is not much good, that they will fade, they are soft and will disintegrate, etc.; and when that competitor, in the afternoon of the same day, meets the same prospective buyer and tells him the same about your product, would not the prospective builder be apt to go home and dream that night of brick walls falling down upon him, and the next day go out and try to find something else with which to erect his building? Where have you bettered your circumstances? If you are honest with yourself, you will have to admit that you have given your own business a "knock" instead of a "boost."

Now as to the remuneration, or price. If you "knock" your competitor's product and he "knocks" yours, would not the thought occur to the prospective buyer that the product itself—yours as well as your competitor's—has little merit and should be purchased cheap. Is it not a fact that you start price cutting then and there by cheapening the product you are both trying to sell. Were there no other reason than this, would it not be sufficient to induce "boosting" instead of "knocking." We cannot for one moment overlook the matter of remuneration. Why are we in business? Why do you put forth every endeavor to secure a nice order? To realize the fruits of your endeavor: Then would "the fruits" amount to much if by cheapening the commodity, you are compelled to sell it almost without profit? Certainly not.

It is time for us to adopt the newer method of pulling together, "boosting" the product we are selling, and let the law of averages take care of itself under the "boosting" methods; and not as in the past under the "knocking" methods, where we wasted much time in thinking of things to say against our competitor's product, instead of those things which were in favor of our own. Under this new method of "boosting" you will make larger and better sales and with much less effort, because you will not have to explain away your co-partner's "knocks" on your product. You will then realize increased fruits of your endeavors because you are increasing the value of your product in the *right* way.

* * *

France Next Stop for Clevelanders

John A. Kling, president of the Cleveland Builders Supply Co., and E. W. Farr, of the Barkwill-Farr Co., Cleveland, Ohio, are among the big business men of Cleveland who have been "drafted" to direct transportation and supply departments in France for the expeditionary forces. They have been asked to hold themselves in readiness for actual service, according to orders received at Cleveland.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

Article Eight: Regulations Which Determine the Right of Shipper to Enjoy the Benefit of Carload Rates

By Sydney A. Hale

The application of any freight rate must be considered from three viewpoints: (1) commodity, (2) quantity, (3) territory. Under the first division come class rates—dependent upon the freight classifications which are the basis of all rate-making—exceptions to the classifications and special, or commodity, rates. The application of a carload rate is conditioned upon loading a fixed quantity called the carload minimum. In the present article, the principles controlling rate application when the size of the car furnished is different from that ordered by the shipper and when the quantity of freight offered is greater or less than the prescribed minimum are discussed.

THE CARLOAD RATE and a minimum weight for a car of definite dimensions when lawfully published in the tariffs of a carrier constitute an open offer to the shipping public to move their merchandise on those terms. It would be wholly unsound in principle to permit the carrier to impose additional transportation charges on the shipper who orders a car of a capacity, length, and dimensions specified in its tariffs simply because it was not provided with cars of the dimensions ordered.—Kaye & Carter Lumber Co. v. M. & I. Rd., 16 I. C. C., 285.

EFFECT OF SIZE OF CAR

Tariffs and classifications state carload minima in various ways. In some cases the weight may be fixed at the marked capacity of the car; in others, the minimum is stated in pounds and applies regardless of the size of the car ordered, while in others the minima increase or decrease with the size of the car actually furnished. Among the commodities subject to this sliding scale are such articles as acids in carboys, certain agricultural implements, aluminum ware, certain gymnastic and sporting goods, bakery goods, boilers, cans, barrels, crates, cotton linters, furniture, leather goods, machinery, musical instruments, sewing machines, soda fountain outfits, rubber tires, tobacco, trunks, traveling bags, and vehicles.

Inasmuch as the publication of a minimum weight is an invitation to move freight upon its terms, the shipper may not be penalized if the carrier is unable to fulfill the conditions of its own offer. The respective duties of railroads and shippers in this matter, as made clear through a long line of Commission decisions and administrative rulings, may be summarized as follows:

RULES GOVERNING PROTECTION OF MINIMA

1. Where a tariff provides minima based upon cars of certain dimensions or capacity, it is the duty of the carrier to furnish such cars upon reasonable request. If, for its own convenience, it does otherwise, it must protect the minima applicable to the cars ordered.

2. As long as it protects such minima, it may (a) furnish a larger car than ordered, or (b), where a large car is requested, two smaller ones in lieu thereof.

3. These provisions, however, must have tariff authority. Without such authority, the minima can not be protected. Relief must then come from the Commission through an order holding the absence of such provisions unreasonable.

4. To enjoy the protection of a specified minimum, the shipment tendered must be such that it could have been loaded into or upon a car of the capacity or size ordered.

5. Where the car ordered, altho provided for in the tariff, is of unusual size or capacity, the carrier may demand a reasonable time in which to furnish such equipment before being required to protect the minimum thereon on different equipment. Six days' time has been held not unreasonable.

Under the two for one rule, where freight moves over more than one road, if the connecting line's tariffs do not protect the minimum weight applicable to the car actually ordered, the burden is upon the carriers to transfer the shipment to a car carrying that minimum. Such transfer must be without expense to the shipper. While the shipment is moving under the original bill of lading, the shipper is entitled to all accessorial privileges and services upon the basis of a one-car charge. Where the shipment moves beyond the point to which the rate under which it was originally handled applies, accessorial rates are collected upon the basis provided for in the tariffs of the lines rendering such services, but in all cases the initial carrier is liable for such additional charges as may be imposed upon the shipper by reason of the failure to furnish a car of the capacity ordered. On the same general principle, if a single car shipment is transferred en route for the convenience of the carriers, such accessorial charges as may thereafter accrue will be upon a one-car basis.

MINING RULE EXCEPTIONS

That enjoyment of a carload rate is conditioned upon loading the prescribed minimum is a rule subject to one important exception. Occasions are not infrequent where the difference in weight between the quantity offered and the established minimum is so slight or the spread between carload and less-than-carload rates so great that the imposition of less-than-carload charges would force the shipper to pay more than if he tendered a full carload. Two examples will make this clear. The class rates on boiler flues between Pittsburgh and Chicago are 22.08 cents in less-than-carload lots and 18.9 cents in carloads. The carload rating is subject to a minimum of 30,000 pounds. Under these rates, a carload would pay $68.04, while a shipment 3,000 pounds less would pay $72.86.

Where the less-than-carload rate is a class rate and the carload charge a commodity rate, the difference is generally still more marked. For example, the carload rate on shoes from Boston to Seattle is $2.75, or $825 for a minimum carload of 30,000 pounds. The class rate is $3.70, which would make a shipment of 25,000 pounds cost $925.

The injustice that would be inflicted in either case is prevented by the general rule that the amount charged for a less-than-carload shipment will not exceed the charge on the basis of a carload rate and minimum weight. This right of the shipper to pay upon a fictitious weight has also been extended to cases where certain accessorial services were conditioned upon the receipt of a minimum quantity of freight.

SHIPMENTS IN EXCESS OF FULL CARLOAD

The other side of the minimum question is presented when the quantity offered for shipment from one consignor to one consignee exceeds the minimum and is greater than can be loaded in the car furnished. The excess is entitled to the carload rate at the actual weight if loaded in closed cars, but to enjoy this rate, each car except that carrying the excess must be loaded as heavily as possible. For example, if the minimum is 40,000 pounds and the shipment 60,000 pounds, it would not be permissible to load two cars with 30,000 pounds each and obtain the carload rating. If the first car could hold 55,000 pounds, that would have to be loaded and the excess 5,000 pounds carried in the second car.†

Application of this principle is not uniform thruout the country. Official classification, for example, limits it to shipments on which the carload minimum is over 24,000 pounds. Southern classification, over 20,000 and western, over 30,000 pounds. All three classifications except bulk freight and live stock form the rule. Western and official classifications eliminate freight loaded in special or specially prepared equipment. Western Classification further excepts furniture, lumber, sash, doors, blinds, scrap iron, and junk. Excess carloads in open cars are subject to a minimum of 5,000 pounds in Western and Southern classification territories, while the minimum in official classification territory is fixed with relation to the weight of the entire shipment. Further exceptions and variations are carried in individual items and tariffs.

⁂

King Coal Threatens Kentucky Manufacturers

Coal is the big, black bugaboo for the Kentucky manufacturers, in spite of the fact that many plants are within wagon hauling distance from the mines. All that will save the situation, it is generally agreed among the coal men and consumers of the state, will be two months of mild open weather. If cold weather should develop early and a big domestic demand for coal be added to the industrial demand there would certainly be a very serious shortage.

With prices fixed and consumers unable to offer any special inducements to the operators in order to get coal all that any brick manufacturer can do is to put in his order and wait his turn or hope that his previously placed order will get early attention. During the past fortnight there has been a lot of disappointment due to the fact that the railroads have been confiscating coal on every hand. Some of the towns of the state are actually barren of coal for any purpose and municipal lighting plants are suspending.

....Worse than that, the government Fuel Administration has agreed to an increase of prices which may be charged for Southeastern Kentucky coal. This means $2.15 for screenings, $2.40 for mine-run, and $2.65 for selected sizes out of a field which has just resumed operations after a strike that tied it up for two months. Western Kentucky coal, of a lower grade and also cheaper, is in increasing demand and can hardly be bought at all. Summer temperatures were in order during the middle of October, canvass the section thoroly a Liberty Loan Legion was

⁂

Inactivity and Paterson Building Synonomous

In and about Paterson, N. J., the building situation shows little indication of resuming its usual activities this fall. Permits are few and inquiries for plans or for material are by no means up to the average for this season. Practically all the available workmen are engaged in erecting the 350 buildings required at a National Army cantonment not far away. It would be impossible anywhere near Paterson to recruit sufficient men to conduct any considerable operation at this moment.

The great need of the city at the present is houses for workingmen. Practically every available house is taken. One family searched for a week to find a house it could afford, without success and was finally forced to settle in a suburb with a long distance to travel to work. This experience is typical and indicates the situation in Paterson. Heretofore, home building, either in apartments or single or double houses has kept pace with the increase in population, but it is not doing so now. Few investors are considering new homes. Fewer still are interested in new commercial buildings. A number of mills are in process of erection, but nothing new is now under consideration.

One reason for this is that everything and everybody in the vicinity of New York is suffering from an attack of pessimism. Money is plenty and business is good. Paterson's silk mills were never more active than at present, but the people have the glooms and nothing can get it out of them. The consequence is shown in the indisposition to undertake any important building operations in this vicinity.

More homes must be built here to house the people who are coming to work in the new mills, but so far as can be seen at present there is disposition to build those homes. Where the newcomers will live is a problem that must be faced and solved, else the city will lose much of the benefits derivable from its new mill investments.

Transportation problems are more troublesome, if possible, than last month and few manufacturers are in position to guarantee delivery at a specified time.

⁂

The world has been at war three years. A hundred billion dollars' worth of capital has been destroyed. Millions of men have been disabled. The United States was forced into the conflict; is raising a big army, building a navy, as well as financing its allies, and is planning to spend five times the total cost of the Civil War in a single year; yet, thanks to the wisdom and courage of President Wilson, who forced thru Congress the Federal Reserve Act, the Trades Commission, the Rural Credits Act, etc., there has been no panic, nor will there be a panic. President Wilson's reform legislation prepared our nation to successfully meet the unusual conditions created by the world war.

---

†The provisions with respect to excess carloads are distinguished from those previously discussed in connection with the two for one rule upon this ground; in the former case, the rules have to do with cases where the minimum is dependent upon the size of the car; the present provisions have to do with cases where the minimum is not so dependent.

The SUPERINTENDENT

Helpful Hints for Practical Men
Whose Problem is Maximum
Production With Minimum Cost

NOTES *on the* FLOW *of* CLAY THRU HOLLOW WARE DIES

By George D Morris

Reprinted from the "Transactions of the American Ceramic Society."

It is an extremely difficult problem to obtain a satisfactory flow of clay thru a hollow ware die. Cut and try methods must be resorted to in finding the best working conditions. This article tells in a very interesting manner the effect that the length of finish of the die and the pressure exerted on the clay have on the ware issuing from the die. The data given here was collected from experience on a sewer pipe plant.

THE NOTES upon which this paper is based have been collected in the practical handling of five distinct clays. They cover three grades of shale and two grades of fire clay. The extremes were not reached in either the shales or the fire clays, but taking the clays as a whole, the extreme limits of plastic and non-plastic clays were handled. In the manufacturing and forming of the ware the degree of plasticity is very important. A very plastic clay may form all right, but not stand the drying process, and the same may be true with an extremely non-plastic clay. The satisfactory flow of clay thru hollowware dies is a complicated problem. We have found from study of different clays, that each clay may be classified by just the way it flows thru the dies.

Visit as many plants as you wish and inquire concerning the pressure it requires to press the clay into the various sizes; and they will invariably give you the number of pounds pressure on the boilers. Referring to the press it would be the pressure on the steam cylinder C, on top of piston head P, Fig. I. In most cases this would be about 125 pounds per square inch. That is as far as the question of pressure is generally studied.

By examining different presses, it will be found that with the same size steam cylinder, there will be a different sized clay cylinder, according to the size of the pipe made on that particular press, and this would give different pressure per square inch in the clay cylinder. The clay cylinders will be found to vary in size, but are readily increased or decreased by putting in a bushing when so desired. The relative pressure of the two heads on the piston varies inversely to the area of the heads. Boiler pressure times area of piston head P, divided by the area of the piston head M, will give the mean effective pressure on clay cylinder head. The area of the 44 in. piston times 125 pounds, equals 189,250 pounds pressure. This pressure transmitted to an 18 in. clay cylinder will give a pressure of 750 pounds per square inch. The pressure of 750 pounds is six times the original boiler pressure. This enormous pressure has a very decided effect on the flow of the clay thru the hollow-ware dies.

REQUISITES IN MAKING SIX-INCH PIPE

The explanation will be more easily understood in the following practical illustration: Take a six-inch sewer pipe. We desire a pipe of about three-fourths-inch shell thickness, that will run out straight and be sufficiently stiff to hold to shape while being handled from the press to the drying floors.

Cross Sectional Views of Sewer Pipe Press

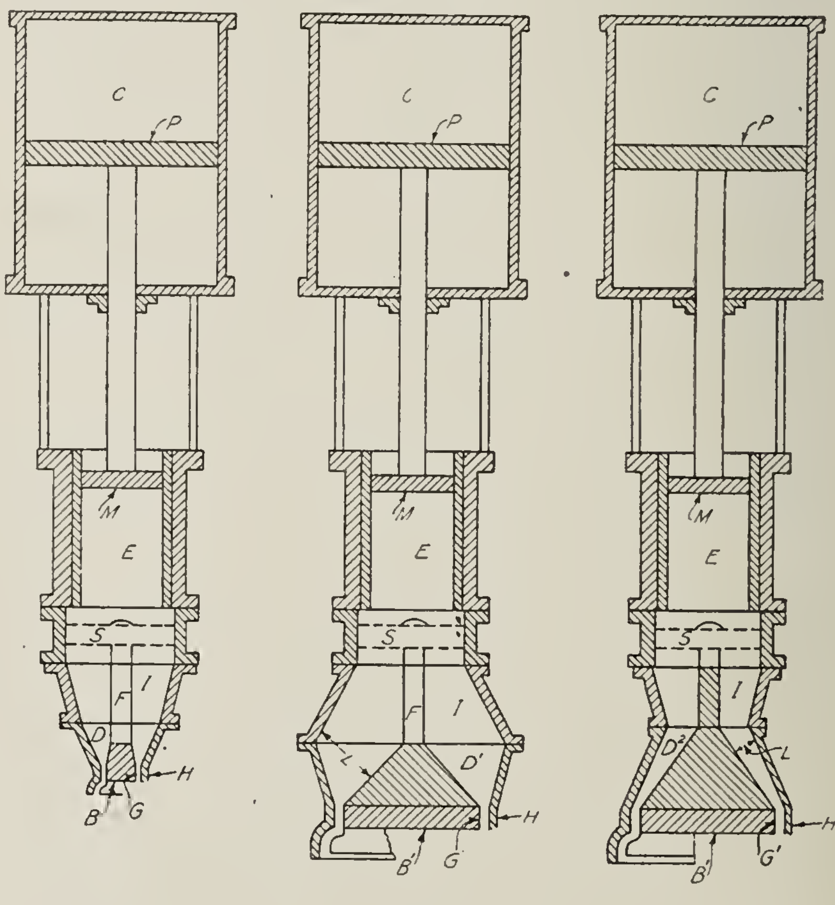


Fig 1 Fig 2 Fig 3

It has been noted that the plasticity governs the stiffness and consistency of the clay running thru the die. A plastic clay will hold its shape in a softer state than a non-plastic clay, and does not require to be pressed as close together as a non-plastic clay.

To make a six-inch pipe run from the die straight, the finish on the die and bell must be of sufficient length to compress the clay into a sufficiently solid body, so that the clay will hold its shape (the finish of dies is shown by G and H in Figs. 1, 2, and 3). Second, the pipe must be so well pressed and knit together that it will pull loose from the socket former and hold its own weight, remaining suspended long enough to permit it to be broken off after the socket former is freed from the pipe.

With a clay having sufficient plasticity and stiffness at a certain pressure to stand the required handling, a certain rule has been found which has worked out in a majority of cases. The length of finish and pounds pressure vary inversely to the plasticity of the clay.

The less plastic a clay is, the more pressure required to press the clay to stand handling. The pressure needed varies inversely as the plasticity. To obtain more resistance in the die, the finish on die and bell must be lengthened. Whenever the finish is lengthened, the pressure must be increased if the clay is going to be stiff enough to stand handling—because when the finish is longer the resistance is greater, and with no increase in pressure the press would not press out the clay.

The relative increase of each cannot be given, but a few illustrations will be cited. A non-plastic, very gritty fire clay failed to give satisfaction with a finish of four-inch pressure of 550 pounds. Raising the pressure to 750 pounds per square inch made a very good pipe. A very plastic clay used on a die with a one-fourth-inch finish at 450 pounds pressure proved unsatisfactory. By increasing the finish to two inches and with the same 450 pounds pressure the result was not improved, as the clay had to be soft at this pressure to stand handling. When the pressure was increased to 650 pounds, good pipe were made, and there was practically no loss from dropping off of crooked pipe.

The larger sizes will vary under the same ratio of plasticity to pressure and finish of dies and bells. The thickness of the shell has a very marked effect on the length of finish. The required increase of finish is hard to determine, but varies directly as the shell thickness. The exact proportion would form a very interesting research problem.

REQUIREMENTS OF A DIE

The exact amount of pressure and length of finish required to make a column of clay run out straight from a six-inch sewer pipe die has been discovered by the cut and try method. The essential requirement of a die is to make a column of clay run straight and smooth. It must press the clay together so that there will be no unequal strains. In the flow of the clay thru a long finish die, the column is formed and compressed sufficiently, so that when the column leaves the die the clay will hold together rather than fall apart. If there is an unequal pressure on the column of clay, a strain is set up, and if the column does not break apart upon leaving the die, it will do so in drying. These unequal strains are often caused by different length of finish of die and bell or an obstruction somewhere. In Fig. 3, the clay has to flow so far thru so small a space that the clay will not run unless just right all of the time.

A short finish of one-fourth inch may be sufficient in a very plastic clay, if the column of clay is run very slowly thru the die. Increase the speed and the clay will not form a compact column. Increasing the length of finish to two inches or four inches will compact the clay solid enough so that a straight column will run out. A good illustration of the effect of short and long finish is that of nozzle used on water hose. A short nozzle will spray the water and a long nozzle with just a slight taper will shoot the water out in one straight solid column. The same holds true with a sewer-pipe die. The column of clay must not spray, but must run in a straight line.

From the above statements it would appear desirable to make all long-finish dies; but as again with the water nozzle, too much nozzle or friction causes unequal flow of water. Too much finish retards the clay, causing unequal flow.

The construction of dies is very interesting, and many times it is a very troublesome problem to overcome some of the difficulties. A press having a clay cylinder of eighteen inches has been cited in the above paragraph, and invariably the "old timer" will say a press of that size cylinder will not make larger pipe than an eighteen-inch successfully. Understand right here it is not the clay cylinder that forms the pipe, it is the extension connecting the die to the clay cylinder. Fig. 2 shows a cross section of a large size die, and if plenty of room is given at L, no trouble will be experienced If the die is constructed as in Fig. 3, there will be no end of trouble with the die due to the uneven running of clay thru such a narrow space. Laminations and blisters are augmented by the narrow approaches to the finish of the die.

* * *

Experience Teaches Costly But Profitable Lesson

The accompanying illustration shows the manner in which a large Indiana plant is now safeguarding itself from insecure kiln bracing—a precaution which owes its existence to a costly accident which occurred at the plant some weeks ago.

Altho Steel Is Expensive, It Is Cheaper to Reinforce the Crown Band Than to Have a Fallen Crown With Its Accompanying Loss in Time, Fuel, and Labor.

A kiln of face brick had been on fire about three days when the large steel band bracing the crown broke and let the crown fall. A part of the kiln wall was also destroyed, necessitating the destruction of the entire kiln. Upon the site of the old kiln is now being erected a new unit of the battery and one which is not destined to the same end as its predecessor.

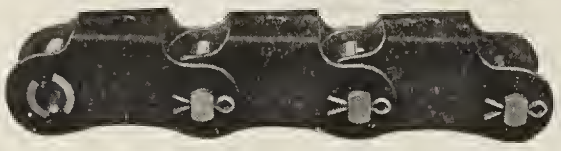
The lesson to be learned from this accident is that the steel bands bracing the crown should be inspected from time to time to see that they are in good condition.

This precaution, however, does not suffice at the plant mentioned now. The superintendent is taking no chances with another lost kiln and is having small steel bands about six inches wide placed around and reinforcing the top band of each kiln. The picture shows the workmen placing one of these small steel bands on one of the kilns.

You Should Know of the Many Advantages of
THE POTTS SPECIAL
A Soft Mud Brick Machine
Self Striking—Horizontal—for Common and Fire Brick
Ask Us for Details and Names of Users
C. & A. POTTS & CO., Indianapolis, Ind.

MORE WORKING CAPITAL
or do you want to expand, to improve a good plant? We specialize in clay plant properties, arrange for the issuance and sale of Bonds. We have rendered aid to many plants. Write us about your needs.
F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILLINOIS

UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket

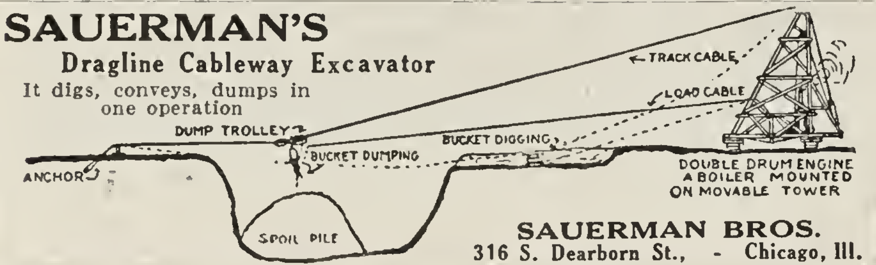


Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used. Sprockets, Buckets, Elevators, etc.—Send for Catalog
"The Chain of Double Life"
THE UNION CHAIN & MFG. CO., SEVILLE, OHIO

CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo, Michigan, U. S. A.

GOODRICH Belts
"Commander" Transmission and "Longlife" Conveyor Belts are unbeatable for the Brick and Clay industry.
THE B.F. GOODRICH COMPANY
Factories: AKRON, OHIO Representation Everywhere

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.

CORK INSERT PULLEYS
BRAKE LININGS, CLUTCH FACINGS AND TENSIONS overcome the worst conditions and produce operating economy.
SEND FOR CATALOG
THE CORK INSERT CO., 168A Federal Street, Boston, Mass.

TO STOP advertising to save money is like stopping a clock to save time.
—*The Little News.*

Only the large upper band is being strengthened in this manner.

Claims One Flue Gives Best Draft

The head burner on a large plant in Indiana claims that in the case where a battery of several kilns is connected to one large stack, the draft conditions obtained depend a great deal upon the manner in which the flues are connected to the stack.

He states that if a battery of eight kilns is connected to one large stack placed in the center of the battery, and the flue arrangement is such that four of the kilns connect with one main flue which leads to the stack, and similarly, the other four kilns connect with a main flue which enters the stack at a different point, the draft conditions are not nearly so good as when all eight kilns connect with one main flue which leads to the stack. In other words, there should be only one flue entering a large stack if best draft conditions are to be obtained.

At the plant where this burner is employed, there is a battery of eight down-draft kilns whose main flues run into a large flue leading to a 140-foot stack which is located at one end of the battery. The farthest kiln is about 200 feet from the stack, yet the draft control on this kiln is as good as that on any of the other kilns.

Salt Glaze Unaffected by Free Silica

In regard to the brightness or smoothness of finish of a salt glaze, it makes but little difference whether free silica is in the clay in a fine state or not (40 mesh or finer). Thus, a fine sand added to a sewer pipe body to facilitate safer and more rapid drying should not affect the condition of the salt glaze materially.

The addition of calcium sulphate or magnesium sulphate to a sewer pipe body tends to make the salt glaze take on a rich brown color even tho a small quantity is added. A large quantity of fine silica added to a sewer pipe mixture will produce a lighter color on the salt glaze.

"Cheating" the Clay in the Pugmill

Upon stepping up to the pugmill of a great number of clay plants it will be noticed that the ground clay enters the machine at a distance of two, three, and sometimes four feet from the rear end. In such a case the rear part of the machine does practically no work at all; yet it takes up space and consumes considerable power.

Since, in most cases thoro pugging and tempering is very essential to the production of a high grade ware, it should be important that the ground clay enter the pugmill at the extreme end of the machine and thus have full benefit of the tempering that the machine can give thruout its entire length.

In some cases it has been found that the clay became too fat if pugged thruout the whole length of the pugmill and the chute which fed the mill was shifted towards the center so as to eliminate some of the pugging. However, this is not true of all of the clays which are being "cheated" in the tempering.

Very often the above condition exists due to an oversight. Sometimes it is due to improper construction or layout of the machine room. It may also be due to lack of knowledge on the part of the foreman or superintendent who fail to appreciate the great improvement in the qual-

ity of the ware that this extra pugging would make possible.

* * *

Result of Five-Year Government Tests on Deterioration of Coal During Storage

A report on the deterioration in the heating value of coal during storage, covering a five-year period, has just been issued by the Bureau of Mines, Department of the Interior, as Bulletin 136, Horace C. Porter and F. K. Ovitz, being authors.

The tests show that the amount of deterioration of coal in heating value during storage has commonly been overestimated. Except for the subbituminous Wyoming coal, no loss was observed in outdoor weathering greater than 1.2 per cent. in the first year, or 2.1 per cent. in two years.

The loss in heating value is given for New River and Pittsburgh coals during five years' storage in the open air and under water, for Pocahontas during two years' storage in the air, and for Sheridan, Wyoming, coal during two and three-quarters years' storage in the air.

The tests with New River and Pittsburgh coal were made to determine the advantage to be gained by storing coal under water, and particularly under salt water. The results show that storage of New River coal under water effectively prevents deterioration of calorific value and that storage in the air under severe conditions causes only small deterioration, about one per cent, in one year's exposure and about two per cent. in two years. After two years the loss is continuous but slow, reaching 2.5 to 3 per cent. in five years.

The deterioration of Pittsburgh coal during one year's open-air storage was practically negligible. During the second, third, fourth, and fifth years the deterioration proceeded very slowly and did not reach an amount greater than 1.1 per cent. in five years. The submerged portions suffered no loss measurable by the degree of accuracy of the methods used.

The tests of Pocahontas coal, a semi-bituminous type, were undertaken chiefly to determine the effect of tropical conditions in Panama. They were made on an outdoor pile of 100 tons of run-of-mine coal. During two years' outdoor exposure this coal deteriorated less than one per cent. in heating value.

The Sheridan, Wyoming, subbituminous coal, known also as "black lignite," is commonly supposed to deteriorate rapidly in storage, especially by "slacking" or crumbling of the lumps. Under the conditions of the tests this coal lost 3 to 5.5 per cent. of its heat value in two and three-fourths years' storage, the greater part of this loss being in the first nine months. In general, the lumps became badly cracked, but retained their form sufficiently to permit ready access of air. However, they were weakened so that they broke up badly on handling. By the use of bins with air tight bottoms and sides and a protecting layer of fine slack on the surface, the deterioration of Sheridan coal in heat value can probably be kept below 3 per cent. in one year and the physical deterioration can also be largely prevented in the under portions of the pile.

The results show that the amount of deterioration of coal in heating value during storage has commonly been overestimated. With coal such as New River and Pittsburgh the expense of underwater storage equipment is not justified except as a preventive of fires from spontaneous combustion.

CRESCENT
BELT FASTENERS
insure continuous operation of all machines with absolute freedom from breaking belt joints.
This means a big saving in both belting and time.
Write for Booklet
CRESCENT BELT FASTENER CO.
381 Fourth Avenue, N. Y., U. S. A.
ECONOMY

Black Speckled Reds
—or any other combination that you want, speckles in buff, grey, white—or in solid grey or black tones.
Crimora Manganese
produces just what you and your customers want. You can depend upon it. Get your next shipment from
Crimora Manganese Corporation
30 East 42nd Street, New York

Blasting without using the
CYCLONE DRILL
is like hunting deer with birdshot. You can't possibly get good results.
We are ready to offer you facts and figures to prove that the Cyclone Drill will soon pay for itself.
Ask for names of users and Bulletin No. 4
The Sanderson-Cyclone Drill Co.
ORRVILLE, OHIO

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.
Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.
Approved by Nat'l Board of Fire Underwriters.
HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

SIL-O-CEL
PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK *11 Broadway* CHICAGO *Monadnock Bldg* PITTSBURGH *Oliver Bldg* LOS ANGELES *Van Nuys Bldg* SAN FRANCISCO *Monadnock Bldg*

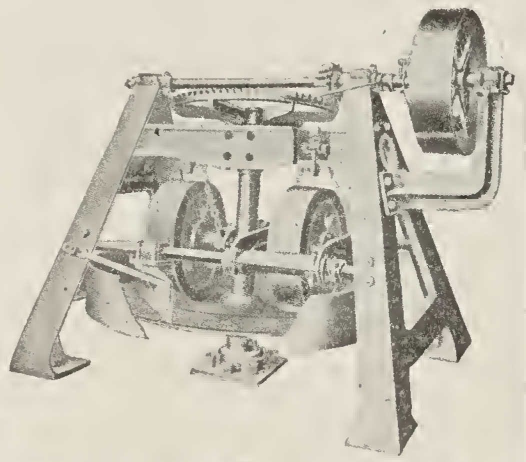
Write nearest Office for Samples and Information

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

THE
EAGLE
DRY
PAN



Write for Prices

EAGLE IRON WORKS DES MOINES IOWA

Base Metal Couples and Low Resistance Instruments are absolutely unfitted for use on Clay plants.

We do not and we will not sell that class of equipment for measuring temperatures exceeding red heat.

STUPAKOFF PYROMETERS

for high ranges of temperature are equipped only with rare metal couples and high resistance galvanometers. They are dependable and we guarantee satisfaction.

The Stupakoff Laboratories
Pittsburgh, Pa.

QUESTIONS

A Two Cent Stamp May Bring You Advice That Will Stop a Waste, Improve Your Ware or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

Switching Plant From Face to Silica Brick

834. *Ohio—Can you supply us with the details of manufacture of high grade silica brick? Under the present unfortunate conditions governing the face brick business we have been unable to secure sufficient business to keep our plant in operation and have been shut down completely since June. We are receiving inquiries right along for silica brick and it has occurred to us that we might temporarily turn our plant over to the production of this material.*

As you are possibly aware, we operate a large stone quarry in connection with our business and produce a very high grade silica, so that we believe our raw materials are all at hand.

We would be very thankful for any information you can give us relative to the manufacture of silica brick and would appreciate the opinion of your experts regarding the adaptability of our plant and machinery in the production of this class of brick.

Silica brick are made by taking two per cent. (by weight) of lime, slacking it, and then adding it to 98 per cent. of ground silica. The silica should be crystalline and of such a character that it will grind down to splinters and particles of irregular sizes, which overlap and interlock to a great extent. *A round grained sand can not be used.*

The silica rock used should analyze to about 97 per cent. pure silica. (The proportions of lime and ground silica named above must be weighed out accurately). The batch is ground and tempered in a wet pan and then molded by hand in a brick mold by what is called the "slop molding" process, the excess material being cut off at the top of the mold by a scraper. The brick are then dried on pallets which are placed on cars and run into the dryer. A steam or waste heat dryer may be used and the time of drying varies from twenty-four to forty-eight hours.

After the brick are thoroly dried they are set in the kilns and fired to temperatures varying between cones 17 and 19 for seven to twelve days, depending upon the size of the kilns used and the maturing temperature, which in turn depends upon the time and temperature required to bring about the necessary volume changes.

The usual equipment on a silica brick plant consists of wet pans, a rock crusher, lime mixer, molding tables, hand molds, mold rammers, pallets, dryer cars which will hold the pallets, a dryer, and kilns.

Would advise that a sample of the raw material be sent to the Bureau of Standards or one of the state universities' ceramics laboratory to be tested in order to determine the possibility of using it for silica brick manufacture. Much depends upon the quality of the raw material.

Before manufacturing this product a trip should be made to a silica brick plant to become familiar with the practice followed in making this product.

and ANSWERS

Best Authorities in Every Clay-working Branch are Called into Consultation — Their Advice is Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

In the light of the above information and with the knowledge which you have of your own equipment we believe you can decide for yourself whether or not your plant can be converted for the time being into one for the manufacture of silica brick.

* * *

Mixing Alluvial and Fire Clays

830. *Georgia—Can you give me any information on the matter of mixing a very plastic, but tender alluvial clay with a highly refractory fire clay so as to get a thoroly vitrified paving brick? Can this be done? I have endeavored to get this information from some of our local brick people, but none of them seem to be in a position to venture an opinion.*

I am aware that a test would be a more definite method of determining the advisability or practicability of this proposition; and, aside from the possible knowledge you may possess of this particular clay or some of the products which it makes, I am not in a position to tell you much about it. I judge that it is somewhat expensive to make an elaborate test and if this mixture is not possible it is useless for me to try it out.

One thing the alluvial clay in question is being used for is in the manufacture of roofing tile. It is very plastic, free of sand, but easy to check or crack in drying or burning. I have no doubt but that it will make common brick quite satisfactory but I have conceived the idea that a very good paving brick could be made by this mixing process.

The possibility of manufacturing a thoroly vitrified paving brick by mixing a highly refractory fire clay with a very plastic alluvial clay, is, to say the least, remote. The reason for this is that a highly refractory fire clay would not vitrify until it had reached a temperature of probably 200 to 400 degrees Fahr., or possibly more, above the vitrification temperature of the plastic alluvial clay. It is impossible to state the exact difference in vitrification points because we do not know whether the fire clay you refer to is a flint or a bond clay, nor can we tell the exact character of the clay which you refer to as being very plastic.

By mixing the two clays together you probably would lower the vitrification temperature of the fire clay 100 degrees, more or less, depending upon the kind of clays. Now, when the ware containing the mixture is burned you still have to go a considerable distance above the vitrification temperature of the plastic clay to obtain thoro vitrification of the ware.

When the vitrification temperature of the plastic clay is passed, it very likely will begin to melt and form a glassy structure which is not at all desirable in a paving brick. Other difficulties such as bleb structure, surface pimpling, and even bloated brick are liable to be met with.

But you never know what a clay or mixture of clays will do until you experiment and try them out. It may be pos-

Send for a Can Today

Get This Can on TRIAL

Keep your belts from slipping. Don't let them rot.

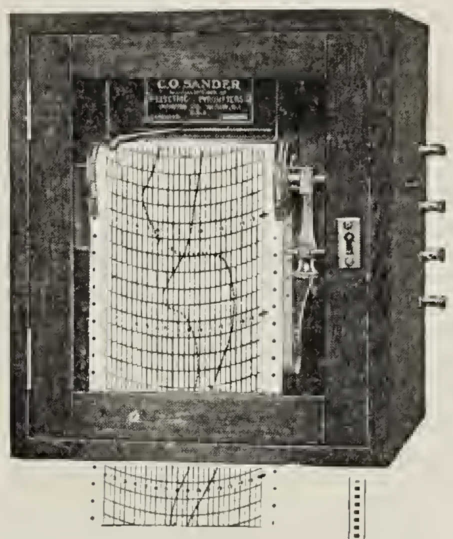
"SERO" Belt Dressing

makes them efficient.

"Sero" on your belts reduces the power consumption and prolongs the life of the belt.

Sero Specialty Co., Cleveland, O.

We also make "Sero" Gear and Cable Coating and Manila Rope Dressing.



SANDER PYROMETERS

Surprisingly low in cost, and yet well made, sturdy and accurate.

The smallest plant can use them efficiently and many dollars will be saved in coal and labor reduction. Ask how.

The Sander Instrument Co.
136 19th Ave. Irvington, N. J.

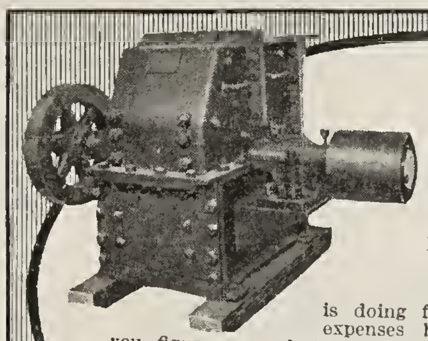
B. & B. Two-Bucket Aerial Tramway

requires but one man for its operation, reduces cost of hauling clay and shale to a few cents per ton.

Outline your haulage conditions and we will gladly estimate the cost and possible savings to you.

Ask for Catalog No. 16.

Broderick & Bascom Rope Company
St. Louis, Mo.



Cut your power costs

If you haven't heard what the **K-B Pulverizer** is doing for others in cutting down running expenses by using less power, let us send you figures on what you want to crush.

Built entirely of steel with manganese steel linings, the K-B will meet the most severe service requirements.

Write us for proof.

K-B Pulverizer Co., Inc.
86 Worth St., N. Y

SAY I SAW IT IN BRICK AND CLAY RECORD

Makes Assurance Doubly Sure

The Homestead Quarter Turn Valve installed with the Hovalco Valve, as shown, is a combination that will act as an additional safeguard on your blowoff lines. If any leakage should develop in the angle valve, the Homestead can be closed while the other one is being repaired. Ask us all about this "money saving pair." Catalog L sent on request.

Homestead Valve Mfg. Co.
Homestead, Pa.

IN THE HEART OF THINGS

The House of Taylor

400 Baths
600 Rooms

Hotel Martinique
Broadway, 32nd St., New York
One Block from Pennsylvania Station
Equally Convenient for Amusements, Shopping or Business

157 Pleasant Rooms with Private Bath
$3.00 Per Day

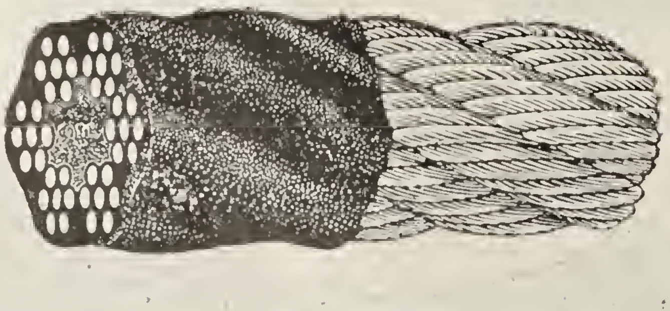
257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure
$3.50 Per Day

Also Attractive Rooms from $2.00
The Restaurant Prices Are Most Moderate

RINO LUBRICANT

It does all that you could possibly expect a lubricant to do; it does all that greases **ought** to do, but don't. It sticks tight to the gear teeth, it forms a shield—a cushion that actually keeps the teeth apart. It prevents wear, it eliminates ninety per cent of the noise; it reduces power requirements. Gear breaks are rare. It does ALL of this and more. . . . . Want a trial can?

The Ohio Filler & Shield Co.
Columbus, Ohio



sible that the vitrification points of the two materials are much closer together than we believe them to be, and in this case, any experiment which you might conduct may probably be rewarded with more success than we anticipate.

⁂

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

E. M. Durant, president of the Pacific Sewer Pipe Co., Los Angeles, Cal., has been visiting in San Francisco.

Henry Clemens, manager of the Cannelton (Ohio) Sewer Pipe Co. and former mayor of Cannelton, was a recent business visitor in Evansville, Ind.

Charles A. Rawson, president of the Iowa Pipe and Tile Co., of Des Moines, Iowa, is at the head of the big campaign now on to raise $300,000 for Y. M. C. A. war work in Iowa.

J. E. Morresey, manager of the brick department of the Cleveland Builders Supply Co., of Cleveland, Ohio, was in Columbus recently looking over the brick situation in the Hocking Valley.

W. H. Gifford, manager of the brick department of the Wisconsin Lime and Cement Co., Chicago, Ill., was a visitor in Cleveland recently, and brought with him the first snow of the season.

After an illness of many months, T. T. Davidson died at his home at 900 West Congress St., Tucson, Ariz. Mr. Davidson was sixty-two years old and was connected with the Pima Brick and Tile Co. of that city.

Martin L. Rice, a tile manufacturer and contractor at Monon, in White County, Ind., has filed a voluntary petition in bankruptcy in the federal district court in Indianapolis. He lists his liabilities at $14,562.72 and his assets at $12,992.

H. C. Kleymeyer, manager, and John Andres, secretary and treasurer of the Standard Brick Manufacturing Co., at Evansville, Ind., have both been nominated for directors of the Evansville Chamber of Commerce. Both Mr. Kleymeyer and Mr. Andres are taking an active part in the campaign to sell the second installment of Liberty Loan bonds.

Robert C. Mitchell, formerly sales manager of the Barkwill-Farr Co., Cleveland, Ohio, and more recently a big factor in the organization of a brick house construction company in that city, has been appointed general manager of the sales division of the Fenn-Farr Co., local representatives of the Chevrolet and Scripps-Booth automobiles.

M. T. Brewster returned on the first of October to his business at Little Ferry, N. J., from his country home in the Adirondacks, where he has been since June. He is ready to again take up his work with greater vim, and is determined that his company will get a good share of the business which is being given out in such generous portions. He said that business for the year has been satisfactory, tho not up to expectations.

Jack Herbert, of the Barkwill-Farr Co., Cleveland, Ohio, has enlisted in the aviation corps, and is now at San Antonio, Texas. He has been appointed a sergeant. Stuart Clink, of the same company, Cleveland, Ohio, has left for Chillicothe. He enlisted for the first camp of the Officer Reserve Corps, but was crowded out by the large number of applications. He already is a sergeant in the Ohio camp.

J. P. Stillwaugh, of Toronto, Ont., Canada, died recently at the age of sixty-four years, while undergoing a serious operation. He was for many years one of the leading business men of Hamilton, Ohio, and superintendent and partial owner of the Bender brickyards in that town. About six years ago Mr. Stillwaugh moved to Toronto where he was, until the time of his death, stockholder and superintendent of the Wilson Brick Co.

Joseph A. Cicotte, formerly superintendent of the Hydraulic Brick Co. of Louisville, and before that associated with the Hydraulic-Press Brick Co., of St. Louis, has been appointed superintendent of the plant of the Coral Ridge Clay Products Co., of Louisville. He is first-cousin to Eddie Cicotte of the Chicago White Sox, and eagerly followed the recent World Series games. which concluded exactly as he thought they should.

The members of the clay products industry in the San Francisco district have responded creditably to the second Liberty Loan, according to Athol McBean, of Gladding, McBean & Co., who has been devoting much time and attention to the campaign. San Francisco was divided by an industrial classification for the drive, and Mr. McBean was held responsible for the showing made by those engaged in the brick and pottery industry.

The body of Walter Currie, age forty-two, assistant superintendent of the Terre Haute (Ind.) Vitrified Brick Co., who disappeared from his home, 1132 Chestnut Street, on the second day of the month, was found in the Wabash River last week. The body was taken to the Ryan Chapel and sent to Danville, Ill., for burial. Worry about an operation that was declared necessary is believed to have affected his mind. His widow and a small son survive him.

Walter R. Simons, of Los Angeles, Cal., head of the Simons Brick Co., has resigned his position as chairman of the executive committee of the Building Industries Association and R. Wolfsberg has been appointed in his place. Mr. Simons explained that the recent expansion of this company in establishing a brick manufacturing plant in the Imperial Valley has made his absence from the city so frequent that he felt he could not, in justice to the association, continue as its committee head.

Most of Louisville took three days off on October 17, 18, and 19 to sell or to be sold Liberty Loan Bonds, Louisville's allotment of which was nearly $13,000,000. To canvass the section thoroly a Liberty Loan Legion was formed of volunteers, among whom were Leo M. Parsons and Isaac Tyler, of the Tyler Building Supply Co.; H. H. Frazier, of the R. B. Tyler Co.; James T. Howington, of the Coral Ridge Clay Products Co., and others of the brick and clay products and buildings supplies trades of Louisville.

Arizona

Yuma, Ariz., boasts of a brick plant as being the latest addition to the industries of that town. It is said that a very fine quality of brick is being turned out by this plant.

SELF LOADING
ELECTRIC INDUSTRIAL TRUCKS

High Up in the Air
4½ Inches—is where the
Elwell Parker "Self-Loading" Electric Truck
carries the load above all runway obstructions.
A special truck built for the Clay Working Industry to handle all the presses produce.
All parts enclosed to fit your plant conditions and enable you to increase your production at less cost.
Four barrow loads delivered at three times the speed on each trip.

Ask for Catalogue No. 711

The Elwell-Parker Electric Co.
"Pioneer Builder of Electric Industrial Trucks"
Cleveland, Ohio

WATT
CARS
"AT FIRST OR AT LAST?"
They stand for efficiency and durability. Ask for catalogues.
The Watt Mining Car Wheel Co.
Barnesville, Ohio, U. S. A.

Arkansas

The Arkansas Brick and Tile Co., of Pine Bluff, Ark., is planning to spend about $15,000 for improvements on its plant, which is situated several miles west of Pine Bluff.

California

As a result of the building campaign recently undertaken by the Hill Street Improvement Association, of Los Angeles, Cal., plans are being drawn for a brick business block to be erected at 911 South Hill St.

The California Clay Corporation, which is preparing to develop clay deposits in the vicinity of Ione, Cal., has been delayed more or less in its exploitation work, but it is now stated that the outlook is favorable for early production of pottery and other products. The clay and sand have been tested and, it is said, pronounced of exceptionally fine quality.

The Stockton (Cal.) Fire and Enamel Brick Co., which operates a large plant in Stockton and maintains headquarters in San Francisco, has been granted permission by the State Corporation Commissioner to issue 14,775 shares of preferred stock at par, $1 per share, the proceeds to be used in the expansion of the business. In addition to its extensive fire brick business, the company proposes to manufacture magnesite brick after the first of the year.

The Terra Cotta Products Co., of San Francisco, recently organized, has been granted permission by the State Commissioner of Corporations to issue 76,000 shares of common stock to T. G. Mapel, C. L. Mapel and E. T. Mapel in exchange for a clay products manufacturing business conducted at Telco, Solano County, Cal., and to sell 40,000 shares of preferred stock at par, $1 per share, to net the company not less than 80 per cent. of the selling price. The firm proposes to install improvements and to extend its business, which is chiefly that of manufacturing drain tile.

The use of vitrified brick for street paving in San Francisco is gradually gaining favor. At a recent meeting of the North Beach Improvement Association a recommendation that Lombard Street, between Hyde and Leavenworth streets, be repaved with vitrified brick was endorsed. A contract has just been let for improving Ortega Street, between Ninth and Tenth avenues, the specifications for which call for a 14-foot central strip of vitrified brick pavement. Proposals are being taken for work on Greenwich Street, between Kearny Street and Grant Avenue, and on Forester Street, between Judson and Staples avenues, which also provide for central strips of vitrified brick.

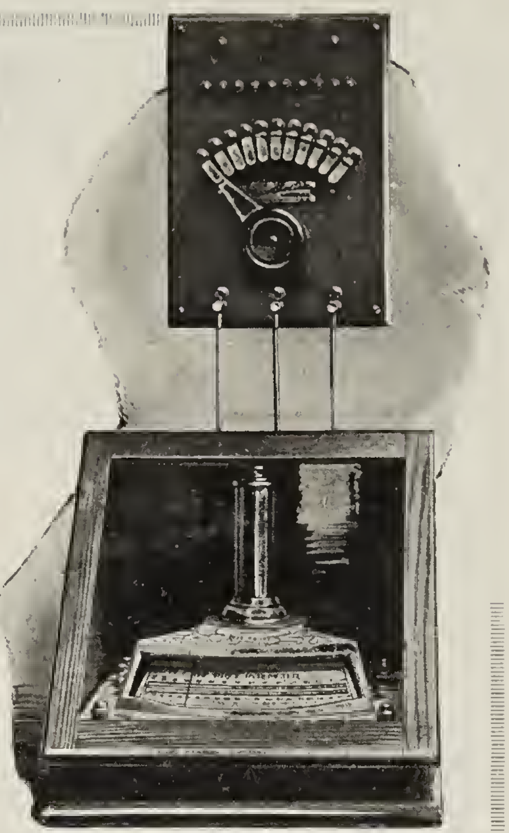
Colorado

Industrial activities in Denver, Colo., has been the cause of a new record of building operations for September. Permits issued in September amounted to $654,410, which is $282,050 more than for the same month last year. The total operations for the first nine months in 1917 aggregate $3,596,750, compared with $3,137,720 for a similar period in 1916. This amounts to an increase of $459,030.

The new Hungarian residents of the Paradox country in Colorado, have established a brick plant near their colony and are now manufacturing brick for their new homes. At present they are making about 2,000 brick each day but they are increasing the size of their plant and expect to turn out 600,000 brick by the first of the year. All of the houses in this colony will be constructed of

Price Pyrometers

The Reason Why—



Many clay plants have eliminated trouble with over or underburned ware, and with swelled or off color ware.

Many plants are burning with less fuel, in less time, with less men, and the reason why is

Price Pyrometers

Results are phenomenal, almost unbelievable—but results are real nevertheless.

The Price Electric Company
12367 Euclid Avenue Cleveland, Ohio

You won't have to worry about competition if you treat your clay with

R. H. Precipitated Carbonate of Barytes

You can safely guarantee that your brick will be

Scum-Proof

You can get a higher price and influence architects to specify your product because Efflorescence is prevented absolutely.

But insist on the R. H. BRAND—it's dependable.

We have a complete line of high grade chemicals for the clay industry.

The Roessler & Hasslacher Chemical Company
100 William Street New York

Chicago, Ill. Cleveland O. St Louis, Mo.
Kansas City, Mo. San Francisco, Cal. Philadelphia, Pa.
Boston, Mass. New Orleans, La
Cincinnati, O.

brick, manufactured of Paradox clay. These brick are somewhat larger than the standard size brick and will be laid flat, making a wall about eight inches thick.

Contracts have been let for the construction of sixty-five modern brick residences in South Denver, Col., to cost over $200,000, by the E. C. Huffman Realty Co. These houses, which will range in price from $3,500 to $4,500 and will be five and six-room bungalows and chateaus erected on 1½ lots of ground, will be sold under a long-time payment plan, thru an arrangement with one of the leading life insurance companies of the country and a national bank of Denver. The homes will be sold on the installment plan, according to reports, the minimum first payment to be at least ten per cent. of the purchase price. The balance of the purchase price will be distributed over 120 or 180 equal payments, which means that the purchaser will have ten or fifteen years in which to pay for his home. If the purchaser dies before he has completed his payments, the wife and children will immediately acquire full title to the property, and the balance of the payments will be canceled. The interest rate will be six per cent.

Delaware

The Southern Ball Clay Co., of Dover, Del., has been incorporated with a capital of $600,000 to mine clay. The incorporators are M. L. Horty, F. D. Buck, and K. Longfield, Wilmington.

The Blue Ridge Clay Products Co., of Wilmington, Del., was recently capitalized at $250,000 to manufacture brick, tile, and other clay products. The organizers of this firm are M. L. Gatchell, M. L. Rogers, and Harry W. Davis.

Illinois

The American Kaolin Co. has been capitalized at Chicago, Ill., at $2,500. The incorporators are William H. Holly, Sol Salins and Charles Aaron.

A survey has just been completed for the extension of the Rock Island tracks on the Long farm near Marseilles, Ill., where the site of a proposed terra cotta factory is located.

The Chicago Ceramic Art Association is at present holding its Twenty-fifth Annual Exhibition in the gallery adjacent to the show of the applied arts in the Art Institute. A display of valuable and artistic pottery can be seen here during the time of the exhibitoin which is from October 9 to 29.

A brakeman on a passing freight train stopped what might have been a very great loss to the Herrick Clay Manufacturing Co., at Ottawa, Ill., recently, when fire broke out and destroyed three freight cars and a small oil shed on its plant. In the oil shed were about forty gallons of kerosene and a barrel of black oil. Before the flames had an opportunity to reach the main factory an engine pulled the burning cars down the track for some distance and a volunteer fire fighting force from Ottawa prevented further conflagration. In a small shanty only a short distance from the burning cars were two and one-half tons of dynamite. The explosive was moved to safety, however, by those who reached the scene of the fire shortly after it started. The total loss is estimated at about $3,000. The loss of the clay company is said to amount to only about $600. The origin of the fire is unknown.

Indiana

Notice of the dissolution of the O'Mara Brothers Brick Co., of Terre Haute, Ind., has been filed with the secretary

One of the new ways to
make a salt glaze stick,
to keep it from leaving
bare spots on Sewer Pipe - - - - is to use

Rollin's Barium Carbonate

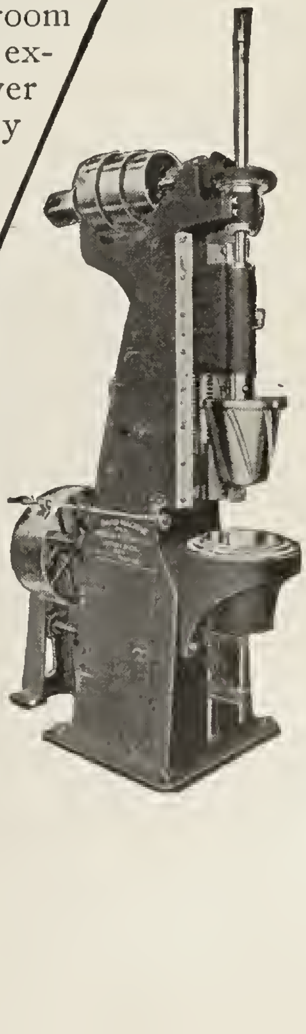
The only sure way to
prevent face brick scum,
to eliminate white wash
from your brick-sales - - - - - - is to use

Rollin's Barium Carbonate

Add Rollin's at the Pug
Mill feeder—it renders
the harmful salts—harmless.
Get better results - - - - - - - Ask

Rollin Chemical Company
Inc.
Charleston, West Virginia

General Sales Agents
National Aniline & Chemical Company
244 Madison Avenue New York City



A bi-product that is profitable

Place the machine off in one corner of your plant, and let it absorb the spare time of your machine room men. They soon become expert, and a stock of flower pots quickly collects, ready for the kiln.

It is almost pure velvet—a bi-product—a sure seller with a manufacturing cost low enough to insure a goodly profit.

Send us sample of your clay and let us show you what our flower pot machine will do.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.

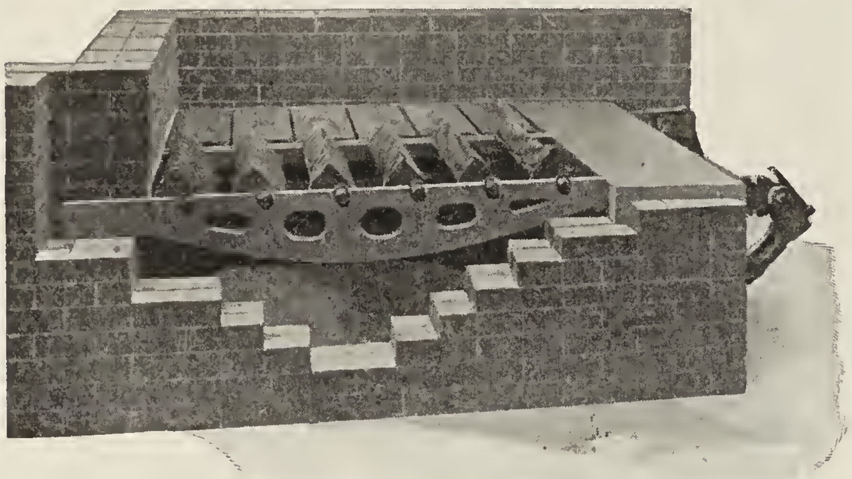
We Guarantee That You Will Save 10% of Your Coal Bill

CYCLONE BOILER GRATES

ordinarily save from 20% to 30% but as a lower limit we guarantee unconditionally—a 10% saving.

Ask for our plan for a 90-day trial.

Cyclone Grate Bar Company
Buffalo, N. Y.



Gold Medal Award

Panama-Pacific Exposition
for

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Their Merits are Vouched for by Hundreds of Satisfied Users
Ask for our New General Catalog No.8

THWING INSTRUMENT CO.
3336 Lancaster Ave. - Philadelphia, Pa.

of state at Indianapolis. The cause of the dissolution is not known.

The Gill Clay Pot Co., at Muncie, Ind., has adopted a plan to provide its workmen with cheap fuel this winter. When the firm bought a big supply of coal for its plant recently, it sold a large quantity of it to the workmen at cost, thus lightening the pressure on the local coal dealers and at the same time conferring a big favor on its employes.

The plant of the Woodburn (Ind.) Tile and Brick Co., a few miles from Fort Wayne, was partially destroyed by fire recently. The loss was estimated at $10,000. The fire originated in the engine room, but the exact cause of it was not determined. E. C. Overmeyer, Henry Templeton, and Benjamin Nine, of Fort Wayne, were the heaviest stockholders.

Paving brick manufacturers in Southern Indiana are urging the use of brick in the building of the market highway to run from Evansville to New Albany. This road will run thru a beautiful stretch of country and it is pointed out that the highway should be built of the best material obtainable; and brick is that material. It is also hoped that brick will be used in the construction of the proposed highway from Evansville to French Lick, Ind.

Business activity with the brick and tile manufacturers of Evansville, Ind., and other points in Southern Indiana has shown no improvement during the past month. The manufacturers at Evansville report local trade dull with out-of-town trade fairly good. Labor troubles have been handicapping the manufacturers to a considerable extent and as more men are taken for the national army it is expected the labor shortage problem will become proportionally more acute. The plants of the Standard Brick Manufacturing Co. at Evansville have been closed down a part of the time during the past month, according to the secretary and treasurer of the company, John Andres, because the company's inability to get workmen. In the opinion of Mr. Andres there will be little work done in the building line now until spring, outside of the work which has already been started. The building of a new $60,000 church, the contract for which had been let, has been postponed. The brick for the structure were to have been furnished by the Standard Brick Manufacturing Co. Excavation for the new Junior High School building has been finished and the brick work has been started, the brick being furnished by the Standard Brick Manufacturing Co.

Iowa

The Southeastern Brick and Tile Association held a meeting at Ottumwa, Iowa, October 18.

The regular monthly meeting of the Permanent Building Society will be held at Fort Dodge, Iowa, November 1. Secretary Platt extends an invitation to all clay products manufacturers whether or not they are members of the society.

In the last issue of *Brick and Clay Record* mention was made of the labor shortage which is facing Iowa clayworking plants. This condition is now so acute that several plants are making preparations to close down, if this becomes necessary.

Kansas

Adams St., Hutchinson, Kan., from the center of the city north to the new residence section, Hyde Park, is to be paved with brick. The city commission has adopted this resolution, after a long fight. The Commercial club of Hutchinson went on record as backing the plan to pave 154 miles of Reno County roads with brick. Petitions are now being signed by the farmers to start this work next summer.

Kentucky

Some of the fire clay deposits in Carter County, Ky., are changing hands on acount of an oil boom which is well under way there. Leases are being taken which cover most of the county, as well as adjoining counties and there is talk about using crude oil for fuel.

One of the victims of the recent coal shortage in Lexington, Ky., was the Lexington Brick Co. The company, after much difficulty, was able to get two cars of coal. They were billed in but before they reached the yards of the company, were confiscated by the railroads and the company had to wait.

One of the oldest and best known brick manufacturing plants of Western Kentucky is that of the Dalton Brothers, at Hopkinsville, Ky., where it has been in operation for more than thirty-five years. It has been kept up to date by improvements from time to time and has a capacity of 26,000 bricks a day. George D. Dalton is president of the company and R. O. Mason superintendent. Latham Davis has charge of the contracting and building department of the company, which is one of its important adjuncts.

Final figures for the building record in Louisville during the fiscal year ending on September 1, show that Louisville suffered a reduction of $1,843,020 from the total figures of the previous year. Building permits for the period amounted to $2,237,410. W. J. Sullivan, City Building Inspector, expressed the opinion that the record of Louisville was not out of range when compared with the other cities of the country. These figures, of course, do not include the $6,000,000 which it is estimated Camp Zachary Taylor had cost up to that time, while since then another $2,000,000 or so has been added to the outlay for the army camp.

The Hillenbrand Brick Manufacturing Co., of Louisville, has a contract for some 200,000 brick for a new moving picture theater which will be built on the Preston Street road, two miles south of the city. A whole retail city has sprung up at this point, which is the main entrance to the army camp south of Louisville. The theater, which will be put up by the Preston Amusement Co., will be the first of all the structures to be built of brick. Everything put up there to date has been of frame construction, some of it stuccoed. Located two miles from the city and outside the fire protection zone of the camp, the insurance rates on this property are very high, ranging up around $5.50 for buildings and contents. One of the builders of the new theater is a fire insurance man and he has appreciated the desirability of putting up a structure which will take a low rate and stay there, once it is finished.

Brick manufacturers and dealers of Kentucky are specially interested in what is taking on some of the aspects of a perpetual disagreement between the Kentucky State Insurance Board and the insurance companies doing business in the state. The difficulties relate to interpretation of the insurance regulations on sixth-class communities, which are without fire protection. The insurance companies, having lost money on this property for a long time, have undertaken to increase the rates up to the point where the business can be handled with profit. The board has objected. At this time, after an all-day conference,

Marion

Steam Shovels, Dredges, Draglines and Kindred Machinery

"LET'S dig our clay out of this 35-foot bank at *one* cut instead of making a two-bench job of it; and let's dig it fast enough so the plant will always have plenty of stuff to work on," said the Bach Brick Company of Chicago. So they bought a "Marion" Model 212, which slices up

Clear to the Top of a 35-Foot Bank, Filling a 2-Yard Car at Each Swing

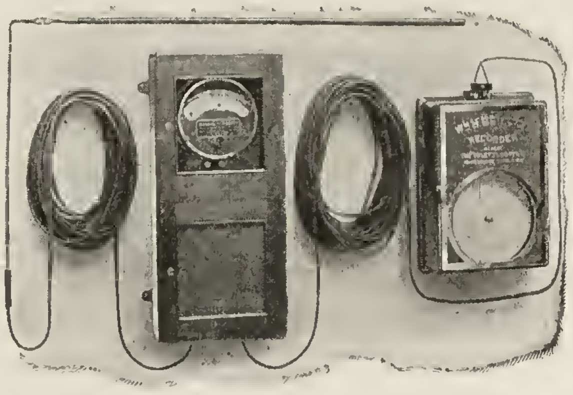
and keeping the big plant supplied "without half trying."

"Marion" is *really* "The Clayworker's Shovel"—it helps boost production and hold down costs in a practical way, and it's always ready for work—*lots* of it. Ask us for facts that will help *your* business—no obligation to you.

The Marion Steam Shovel Company, Marion, Ohio

Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle

222 ESTABLISHED 1884



TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.

RECORDING PYROMETERS

BRING THE KILN INTO THE OFFICE

—right to the Superintendent's desk, giving him more time to do brain work.

The recorders bring him records in permanent form of the temperatures at the kiln. He can compare today's temperatures with that of yesterday, a month ago, or a year ago.

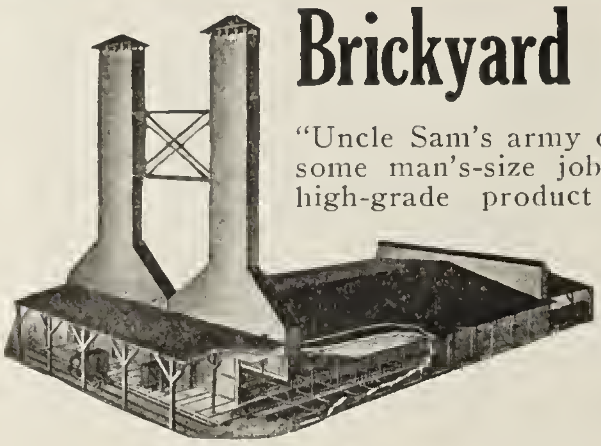
Down at the kilns an equal number of Bristol Indicating Pyrometers act as a guide for the burners. Team work of this sort eliminates all guess work and the resulting inefficiencies.

Suppose you allow us to show you how you also can increase team work and efficiency by the use of Bristol's Recording Instruments.

Write for Bulletin 163.

THE BRISTOL COMPANY, Waterbury, Conn.

Branch Offices:—Boston, New York, Pittsburgh, Chicago, San Francisco



Brickyard Bill Says:

"Uncle Sam's army off'cers has sure got some man's-size job, makin' a uniform high-grade product out o' all them diff'runt v'rieties o' green, m'terial. But it kin be did. Th' Standard Brick Drier's been a-doin' it f'r thutty years."

The Flexible Heating System of

The Standard Drier

makes it applicable to ALL clays and ANY steam conditions. There is nothing theoretical about The Standard Drying System. The piping is applied in the manner that our long experience has demonstrated to be most efficient in meeting the requirements of the various natures of clays. The heating apparatus is FITTED to the NEED in every case.

Write for complete description and free estimate. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.
Cleveland, Ohio
Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

the State Board is investigating the statements of the company representatives and it is expected that something will result from the discussion. The brick men are getting this advantage; constant agitation of the insurance rate question keeps calling attention to the lower rate given the man with a brick house than to his neighbor with a frame inflammatory.

Extension of the building program at Camp Zachary Taylor at Louisville has increased the amount of business supplied by the Southern Brick and Tile Co. to fully half a million brick. The plant of the company at Bishop is about half a mile from one edge of the camp and the haul has been by wagon and by truck. Some of the deliveries have been made by the company, while the government has sent trucks for the rest. A great part of the brick, however, has been sold with only one handling, being loaded onto the trucks and wagons right out of the kilns, this effecting a large saving in costs and time. The brick are used at the camps for the sewer manholes and for piers for the warehouses, none of the construction being of anything but frame. There is some shipping business from the Southern plant and the company is running on tile a good deal of the time. Much of this work is on the books and it is more than likely that the company will sell out on this product before the season has advanced much further.

When the government started to build Camp Zachary Taylor at Louisville it was apparent that there would be a labor shortage in the city and section until that work was finished. At the height of operations there were a few score more than 10,000 workmen employed there and the building trades and building supply men of Louisville began to date revivication of their business from the time the cantonment should be finished. It was "completed" and "accepted" officially by the last of August. But the latter half of October finds some 8,000 workmen of all classes still engaged in putting up buildings at the camp and nobody knows when it will stop. Just as the general contractors begin to see the end of what they are doing the War Department comes along with another addition. At this time the camp is fully 40 per cent. larger than at the outset and it is purely a speculative proposition when they will finish. Meanwhile there is a very trying dearth of all kinds of labor in Louisville and the surrounding country. The wages paid at the camp are somewhat higher than the average about the section and there is more opportunity for overtime. Brick manufacturing plants have been having real troubles. One manufacturer stated to the representative of *Brick and Clay Record* that on one day his normal force of 100 men was cut down to eleven by desertions to the camp building force.

Maryland

The Howard Refractories Co., Inc., Equitable Building, Dorsey, Md., has awarded a contract for the construction of a new one-story factory to cost about $20,000.

Michigan

Among the new corporations in Michigan is the Detroit Clay Products and Sand Co., which is capitalized at $6,000.

The Imperial Brick Co., manufacturers of the product called "Com-po-sil," is about to erect the first of its contemplated four plants in Detroit, Mich. Special machinery is now being manufactured for the concern, which intends to manufacture 100,000 brick a day at each one of its plants.

Minnesota

The brick contracts for the new Virginia Technical School of Duluth, Minn., have been awarded to the following firms: The Paine and Nixon Co. will furnish the exterior face brick, while the interior face brick will be supplied by the Thomson-Williams Co., the common brick will be furnished by the Verna Brick Co., and an order for sand-lime brick went to the Range Sand-Lime Brick Co.

Missouri

The general offices of the Laclede-Christy Clay Products Co., of St. Louis, Mo., have been moved from the plant, on Manchester and Sulphur, to the downtown district, St. Louis, and now occupy suite 1673 in the Railway Exchange Building.

New Jersey

The Matawan (N. J.) Brick Co. has filed articles of incorporation with a capital of $25,000 to manufacture brick and other clay products. The incorporators are N. G. and W. H. Taylor, and A. M. Duval, Matawan.

The Trent Tile Co., Trenton, N. J., will supply the tile to be used in the construction of the new Pennsylvania Hotel, New York City, opposite the Pennsylvania Railroad station. The value of the material to be absorbed by this job amounts to about $100,000.

The Ceramic Products Co., Inc., Newark, N. J., has been incorporated with a capital of $25,000 to manufacture ceramic products of various kinds. The incorporators are H. A. Pike, J. G. Turnbull, Brooklyn, N. Y., and I. A. Call, New York city.

The E. M. Rodrock Co., of Paterson, N. J., has been having difficulty with its coal handlers who went out on strike, thereby making it difficult for the brickmakers to procure a sufficient supply of coal, from the usual source, with which to burn their ware. However, the men have gone back to work, the differences having been adjusted satisfactorily, and the coal supply is no longer threatened.

The New Jersey Wire Cut Brick Co., of which Alpheus Krantz, of Paterson, N. J., is the principal owner, having recently purchased it from the Kinney Co., of New York, has completed the constructional work on its buildings, and is now doing business in Paterson. The buildings have been erected of the brick left on the ground after the destruction of the Canadian Car & Foundry Co.'s and the New Jersey Brick Co.'s plant by fire last year. The drying racks are among the best that have been introduced in any of the plants in the East.

New York

The Albany (N. Y.) Clay Product and Crucible Co., 142 Van Woert Street, has had plans prepared for the erection of a new one-story factory, about 35 by 75 feet, to cost about $5,000.

H. E. Bunce who has the contract for the paving of East State street in Jamestown, N. Y., is doing work with hot brick. The brick are being furnished by the Allegany Valley Brick Co., whose plant is located just outside of the city limits. The demand for brick has taxed the capacity of the factory to such an extent that the brick are being taken from the kiln before they have had an opportunity to cool completely and delivered, after a short haul, to the place where the paving is in progress. The brick from the center of the load are almost too hot to handle, according to the foreman in charge of the work.

Look This Car Over Carefully

Note the way it is braced, and the manner in which it is put together. Stout and rugged, capable of resisting dipper hammering, big chunks dropped into it, derailments, etc. In addition it is Bottom Dump, it does not hammer itself to pieces when dumping.

The Youngstown Steel Car Company
Youngstown, Ohio

Your Fortune For Coal Or Use Canton Shaking Kiln Grates

Which?

One of the very prominent refractory men says: "It is simply beyond my comprehension why otherwise good plants still use old methods. We are saving over 25% of our fuel with Cantons, amounting to thousands of dollars each season.

Get our bulletins.

The Canton Grate Co.
1706 Woodland Ave., Canton, Ohio
Southern Representative:
Mc BURNEY & JONES
Efficiency Engineers
829 Trust Co. of Ga. Bldg
Atlanta, Ga.

"SCANDINAVIA"

(Solid Woven Cotton Belt)

is the kind of belt that gets the preference from those clay-products manufacturers who are most particular about knowing the exact cost of operation in every detail.

"Scandinavia" always shows up so well when the manager looks over the cost figures that there never is any question as to the belt that will always have the preference.

"Scandinavia" is the belt for you to use for power transmission—elevating and conveying.

Try it once and you'll be convinced

Scandinavia Belting Co.

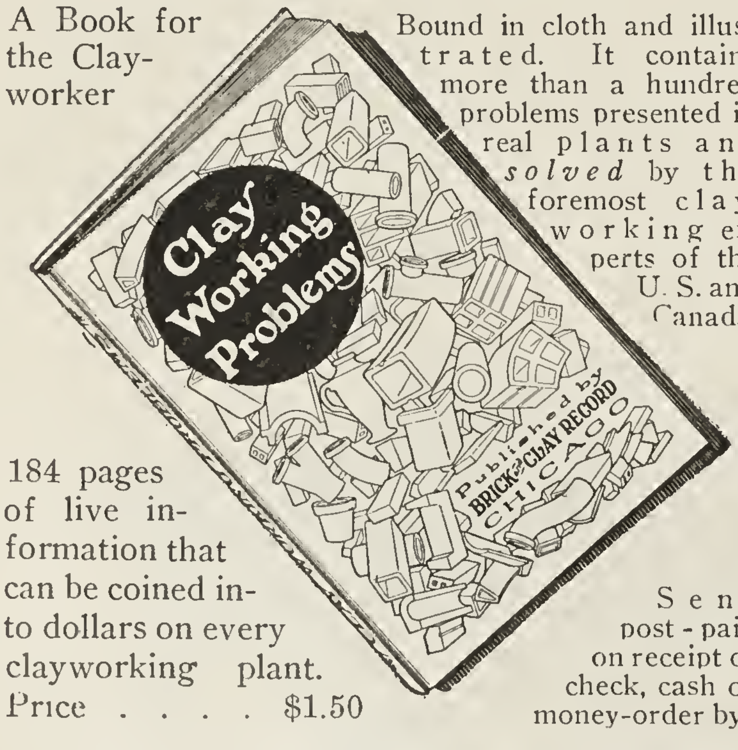
106-108 Reade Street, New York

Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.

Canada: Federal Engineering Co., Limited, Toronto and Montreal.

101 Questions Answered

A Book for the Clay-worker


Clay Working Problems
Published by BRICK & CLAY RECORD CHICAGO

Bound in cloth and illustrated. It contains more than a hundred problems presented in real plants and *solved* by the foremost clayworking experts of the U. S. and Canada.

184 pages of live information that can be coined into dollars on every clayworking plant.
Price $1.50

Sent post-paid on receipt of check, cash or money-order by

Brick and Clay Record
445 Plymouth Court CHICAGO

Ohio

Bids were opened recently for the construction of a $75,000 Y. M. C. A. building for colored people in Columbus. There were quite a few bidders and the contract may be awarded soon.

English size hydraulic-enamel face brick, to be used on the new Cleveland Hotel, are now being delivered by the Hydraulic-Press Brick Co. of Cleveland. This order will run upwards of 1,000,000 brick.

The Central Ohio Brick Co., of Zanesville, Ohio, has been incorporated with a capital of $10,000 to manufacture and sell brick. The incorporators are James Ford, Frank M. Schimpf, Edward B. Meyer, W. S. Ford, and P. J. Flanigan.

Work at the Ohio state brick plant near Junction City, is to be curtailed to a considerable extent during the winter months. The scarcity of coal is being felt severely and on one or two occasions during the past few weeks, the plant has been compelled to shut down on account of lack of fuel.

The Harris Brick Co., of Zanesville, Ohio, has awarded a contract to a local contractor for the erection of ten flats for their employes. Work on the new structure will be started at once. When completed these houses are to be used by those employes transported from the other plants of this company.

County commissioners at Marysville, Ohio, have failed to receive a bid for the $754,600 county road 5 per cent. bonds to provide new pikes and improve old ones in the district. Average life of the bonds was 2½ years. It is expected they will be sold to local banks and private parties.

Plans for the organization of the Cleveland Homes Co., a corporation that will erect 10,000 moderate priced homes for working people, are being completed. While the majority of these houses will be of frame construction, some brick houses will be erected, according to the demands of location.

Bids were opened October 12 by the Ohio Highway Commission at Columbus for a number of brick paved roads thruout the Buckeye State. Three sections in Ashland County are to be paved with brick, and two sections in Huron County, Mahoning County, Seneca County, Stark County, Summit County and Wayne County.

Some school buildings are now being projected and that is probably the best feature of the trade at this time in the Buckeye, State. Many boards of education have sufficient funds available to go ahead with their building programs and consequently there is a fairly good demand for brick from that source. This class of work is expected to continue rather steadily.

Business with the D. C. Shorey Brick Co., of Cincinnati, Ohio, according to Mr. Shorey, while not active, is far from being stagnant. Among the recent shipments completed by this company is one of red smooth face brick made for the new plant of the French Brothers Bauer Co.; three-quarter million brick for the Owens Battle Co.'s plant; a large number of "Shore-tex" brick for a moving picture house at Morrow, Ohio, and a church at Walton.

J. J. Shea, of the Barkwill-Farr Co., Cleveland, reports an unusual number of inquiries for common brick, indicating a resumption in general building activities. Reflection of the return of money thru the first liberty loan is seen here, he believes, and this will be augumented as money from the second loan returns thru its natural channels. Outlet for common brick will be in increased by the building of munition and other plants in the Cleveland district.

Steady progress in the paving program of Cleveland is reported by the executive board of the Civic League of Cleveland. The paving thus far accomplished with this year's portion of the $10,000,000 paving program under the $3,000,000 bond issue, has been fifty-three paving jobs. varying in length from 316 feet to 5,785 feet, and nineteen new contracts have been let by the board of control. The engineers of the League have been supervising the work, and will report in detail during the next month just what results have been obtained and will discuss the more important defects in the city's control of paving its streets and highways.

The report of practically all of Cincinnati's brick and clay products dealers on business conditions is essentially the same, and might be summed up in the one word "punk." At the office of the Cincinnati Clay Products and Supply Co., the Brick Sales Co., Moores-Coney Co., and the Purcell-Grande Co., *Brick and Clay Record's* representative received practically the same story. There is little life to the trade, only a small call being made for materials, and prospects for any additional impetus before the coming of the new year being decidedly remote. However, the spirit of optimism still prevails and despite the tale of woe on every hand, all look toward 1918 with expectancy, believing and trusting that it will bring decidedly better conditions.

Altho present indications in the building industry in Cincinnati, Ohio, are anything but encouraging there are a few large operations going on to keep up the pulse of building activity. It is predicted that the next few weeks, or months, will see a few more large operations under way. One of the most notable buildings to be erected in that city, the contract for which will be let soon, is the Dixie Terminal Building. This building, which will be the terminal for the Green Line cars operating in a number of Kentucky cities, will cover more ground floor space than any other commercial building in the city. All told it will have an area of 54,500 square feet. It is to be faced with front brick and terra cotta, woven into an Italian Renaissance style of architecture. Very little residential work is now going on in Cincinnati.

Increase in the output of radial block for manufacturing plant smokestacks is being made at the Pearl Street plant of the Barkwill-Farr Co., Cleveland. This is to fill orders for the Rust Engineering Co., of Pittsburgh, which is building a plant for the New Jersey Ship Building Co., Gloucester, N. J. This block also will be used in the National Malleable Castings Co.'s plant in Cleveland, and stacks for the new car shops of the New York Central Lines at Buffalo, and the shops of the Baltimore & Ohio Railroad at Garrett, Ind. Altho this block has been produced at the Barkwill-Farr Co.'s plant here for only a month, a tremendous demand has developed for it. Six different shapes are being made, to provide for the different requirements of chimneys. The Barkwill-Farr Co. also is making a new 5x12x12 tile for use in basement wall construction. The feature of this product is that it is a labor-saver, because of its large size, and this factor is making for orders in excess of production.

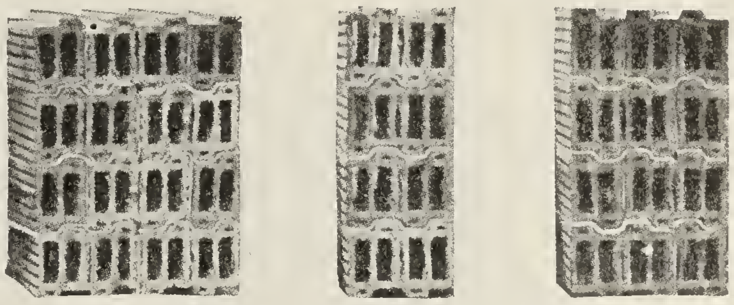
The Lincoln Highway association is planning the construction of a road across the Salt Lake Desert at a cost of about $157,000.

Tycos
FERY RADIATION
PYROMETERS
Eliminate Guesswork from the Manufacture of All Products requiring extremely high Temperatures * * * *

We Manufacture - Thermometers and Instruments covering every Temperature requirement in Metallurgy and Chemistry

A Catalog Cheerfully Sent Upon Application

The Taylor-Cambridge Division
Taylor Instrument Companies
Rochester, N.Y.


"LOXALL"
A BETTER HOLLOW BLOCK

You can get it—the exclusive rights to manufacture it in your territory—if you act now.

It is designed so that everybody concerned likes it—the Buyer, the Mason, the Manufacturer.

It is easy to make and low in cost. It is easily and quickly laid in the wall. It has a good appearance. It is a real heat, sound, moisture and air insulator.

"LOXALL" is a better hollow block. The interlocking lugs dovetail perfectly, making a joint that the mason finds easy to spread. Act quickly and get your territory assigned.

J. E. EXNER
602 Lincoln St., Coffeyville, Kansas
Patented in the United States and Canada.

The
Bell Steam Locomotive

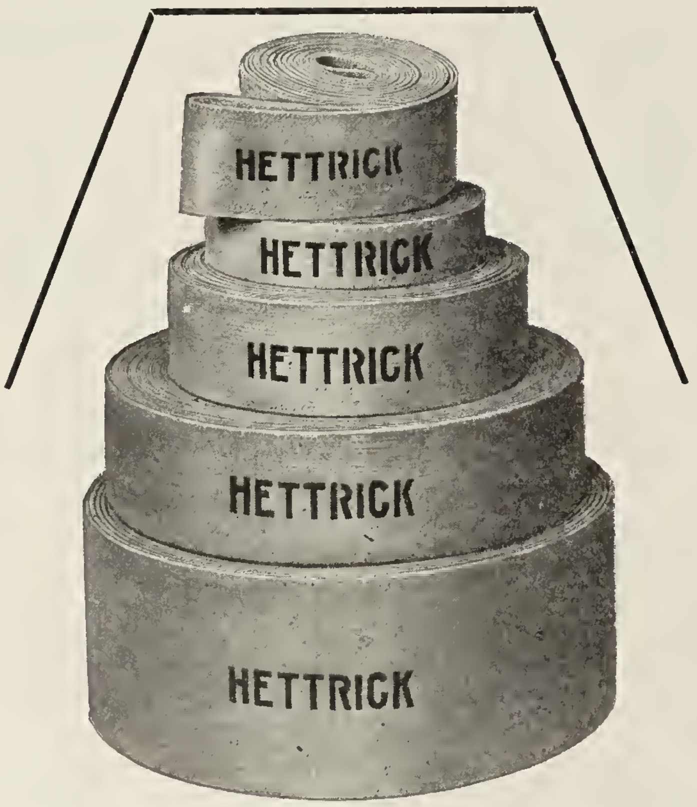
is the wish, the dream come true of the average plant—to find a hard pulling, low cost locomotive.

The "Bell" supplies the want, for, in addition to low first cost, it is extremely easy to operate (no licensed engineer is required), and upkeep and operating cost is almost negligible.

It is the most economical locomotive that you can buy—and it can do more work than you will want done. Inquire of

Bell Locomotive Works, Inc.
30 Church Street New York

The real value to your plant, in having in reserve a pile of belting like this



is only evident when the break comes. With a "correct" belt in the store room, there is no worry or prolonged delay, and Hettrick Belts are Good Belts.

The Hettrick Mfg. Co.
Toledo, Ohio

Oregon

The brick plant of the Bend (Ore.) Brick & Lumber Co. has stopped operations for the season after turning out over 2,000,000 brick, and the energies of Mr. Horn are now being spent in securing a good road from Bend to the plant. Mr. Horn is also investigating another clay deposit near Bend, which he believes contains material which can be used in manufacturing a light colored brick.

Pennsylvania

The National Clay Refining Co., of Philadelphia, Pa., has filed notice of an increase in its capitalization from $75,000 to $112,500, for expansion.

The Milton (Pa.) Brick Co. recently filed a complaint against the Pennsylvania Railroad Co. which on October 15, canceled its tariff that carries a twenty-six cent rate into Milton to all switches.

The Auburn (Pa.) Shale Brick Co. is now operating to full capacity, and it is said that the output of the plant could be greatly increased could they get the necessary hands. Owing to wartime conditions, the shortage of labor in this district is very marked.

Utah

Lars Frandsen, of Price, Utah, has received some large orders for brick from the local trade.

Wisconsin

Two alarms were sent to the city fire department of Appleton, Wis., a few days ago when a blaze, the cause of which is still unknown, in the plant of the Standard Brick Co., 496 Clement Ave., threatened the neighboring residence section. A shifting wind fortunately threw the flames to the east and prevented them from spreading. The loss in property is estimated at several thousand dollars. The most damage was done to the engine room, which was a frame structure.

⁂

POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

Unless the impending strike of the National Brotherhood of Operative Potters is settled satisfactorily six or seven of the large tableware manufacturers of Trenton, N. J., will have to close up their shops. Their employes are determined to get the twenty-five per cent. increase which they, with the other potters all over the United States, have demanded; and the owners are equally determined to protect their business to the best of their ability. The firms to be affected by the action of the workers include: The Cook Pottery Co., International Pottery Co., Mercer Pottery Co., Greenwood China Co., The Maddock Lamberton Works, and the Jones Brothers Co.

Following the walkout of the workmen from the Steubenville, Ohio, potteries, the Manufacturers' Light and Heat Co. served notice that no gas would be furnished for the potteries after January 1st. Operators immediately announced that no action in securing coal to run the plants would be taken unless early settlement of the strike is effected and that the potteries would be locked up.

The production of ware at the Buffalo (N. Y.) Pottery Co. has been crippled owing to the fact that the majority of the workers have joined the general strike among potters. Out of a force of 350 workers, only 100 china workers remain at their tasks. These potters will remain at work pending the result of a strike vote to be held this week. The other workers were semi-porcelain potters.

A number of pottery plants in California are now getting talc shipments from a deposit in San Bernardino County. The shipments have to be hauled about seven miles to a railway station, two motor trucks and six mule teams being engaged in this work. Amos Brothers are sending out a carload a day from their mine, and it is understood they are preparing to increase the output.

Fire, said to be of incendiary origin, caused damage to the extent of $5,000 at the Lamberton plant of the Maddock Pottery Co., of Trenton, N. J. This fire is the fourth of its kind at the plant since July 30. The total damage done by these four fires amount to about $20,000.

The Mt. Clemens (Mich.) Pottery Co. is threatened by a strike on the part of its workers who intend to go out with the men who are striking in East Liverpool and other pottery centers. These men have voted to abide with whatever decision the national body makes.

The Crown Pottery Co., at Evansville, Ind., is also facing a strike on the part of its workmen who have agreed to go out with the national body. This strike would affect 140 workmen. It is said that two other potteries in Evansville will not be affected.

Charles A. May, Ambrose G. Dale, Mark Solan, Charles H. Cook, Arthur Tams, heads of the potteries of Trenton, have contributed sufficient plates and saucers to supply the needs of all the boys in the employ of "Uncle Sam" at Camp Dix, just a few miles outside of Trenton.

M. Platts, formerly connected with the first porcelain works started in Richmond, Cal., is back from a trip to Australia and New Zealand, and is working on a proposition to establish another porcelain plant on the east side of San Francisco Bay.

The Thomas Maddock's Sons Pottery Co., of Trenton, N. J., has awarded a contract to Hiram Hughes, 1145 Indiana Avenue, Trenton, for the erection of a new one-story kiln shed, about 40 by 88 ft., to cost about $4,000.

Quantities of silica from mines in Placerville, Cal., are being delivered to the pottery plants of Richmond, Cal.

The Standard Pottery Co., of Los Angeles, Cal., has increased its capital stock to $25,000.

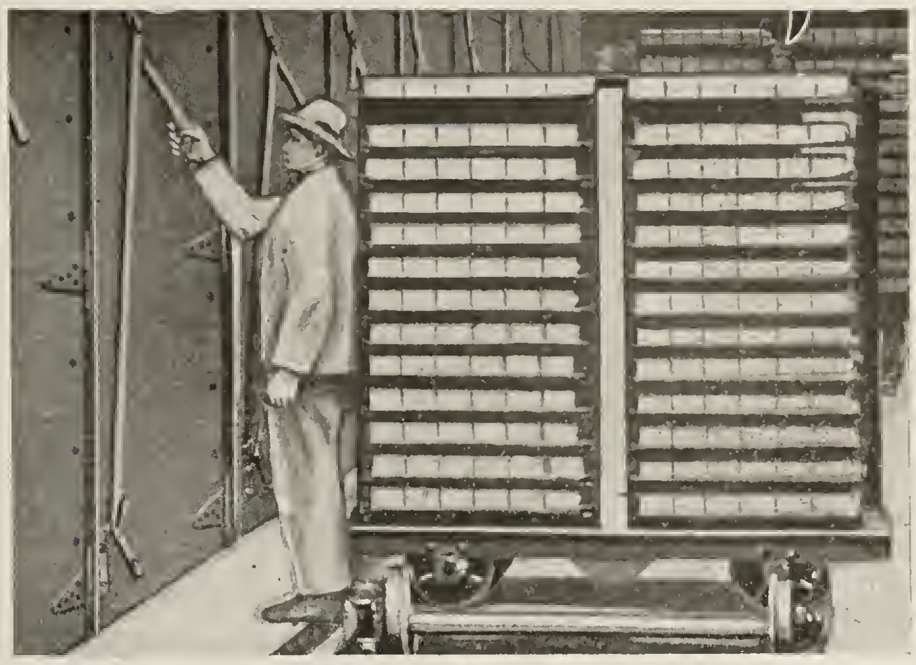
⁂

Chicago Fire Brick Company Introduces Novel Salesmen's Banquet

The Chicago (Ill.) Fire Brick Co. held its "First Educational Banquet" at the Sherman Hotel, Chicago, on Thursday evening, October 18, when twenty-four members of the Chicago sales force sat down to enjoy a splendid repast.

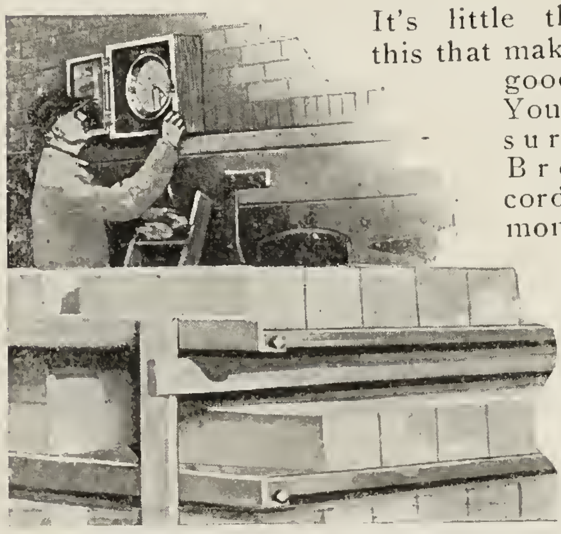
Frank J. Silha, city sales manager, was toastmaster of the banquet, and welcomed the members of the sales force in a befitting manner, explaining to them that the one object of the banquet was that of education. He spoke of the benefits to salesmen of securing knowledge of the production of building materials.

W. J. Gilbert, president and general manager of the company, gave the salesmen a few pointed sales remarks, one of



On Your Dryers Use

Brown Recording Thermometers and give your kilns a square deal. What's the use of pushing 325° into your dryers for twenty-four hours and only 150° the next day. Certainly that's going to affect your burn.



It's little things like this that make or break good profits. You can be sure that a Brown Recording Thermometer on your dryers will pay for itself in a week or two

It will not cost you one cent nor obligate you in the least to write to the Brown Instrument Company, Philadelphia, or one of their District Offices in New York, Pittsburgh, Detroit or Chicago for full information now.

Brown Recording Thermometers

The Sand-Lime Brick Buildings of
The Crucible Steel Co.
Syracuse, N. Y.
J. M. French, Architect.
Brick made by Paragon Plaster Co. of Syracuse, N. Y.

Send US a Sample

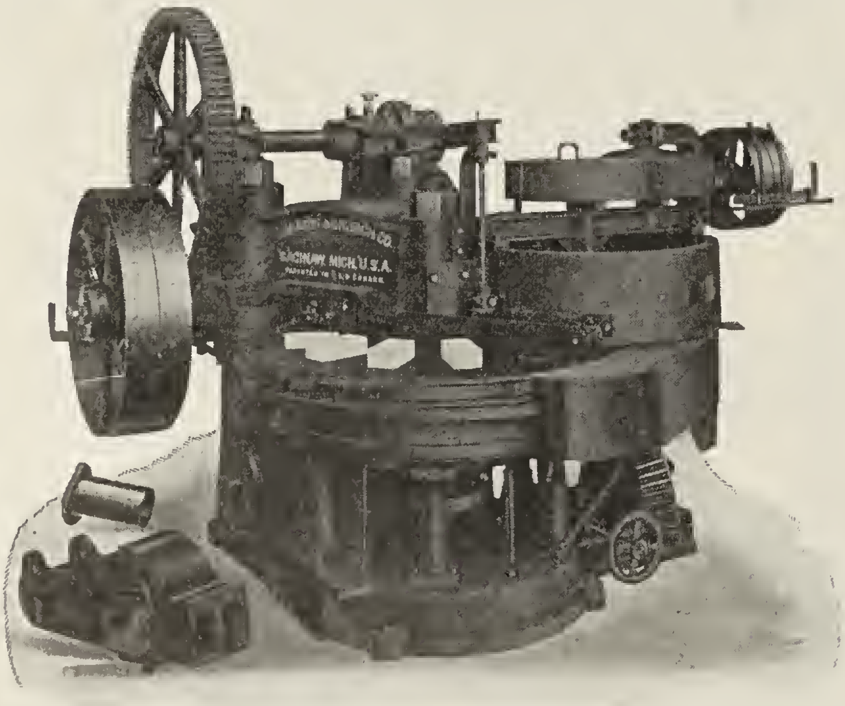
Box up and send to us one pint of the best sand that is available in commercial quantities in your district, and we will tell you if it is suitable. Or box up one cubic foot of sand, and we will make a complete test, sending you the brick if the test is successful.

The machine equipment of a Sand-Lime plant is not complex—the process is simple, and in raw materials the constituent parts are 95% sand and 5% hydrated lime.

The Saginaw Process of manufacture may solve your difficulties, or open up a new manufacturing plant for you with all of the possibilities of a coming business.

Let's talk it over.

Jackson & Church Co.
Saginaw Michigan



The "Saginaw" Rotary Table Brick Press.

which was: "Salesmen should use the positive in selling a prospective buyer by putting into his mouth the answer you would like to have him give you." He illustrated his remark by referring to questions asked purchasers in the big department stores of Chicago where a salesman usually puts this question when making a sale: "Shall we send the package or will you take it away?" The person usually pays attention to the latter part of the remark and answers by saying, "I will take it with me," thus eliminating the cost of delivery. Mr. Gilbert then introduced the speaker of the evening, C. F. Breen, general manager of the Cardiff Gypsum Plaster Co., Fort Dodge, Ia.

Mr. Breen's remarks on "Salesmanship" were well received and appreciated. He emphasized the point of keeping after the prospective purchaser until the order has been secured.

"Educational" banquets will be hereafter regular features of the city sales department of the Chicago Fire Brick Co. As the name implies, these meetings will be devoted to educational work in behalf of the salesmen.

⁂

Plans for two large structures will soon be filed in Jersey City, a large packing plant to be constructed by Armour & Co., Chicago, on property recently acquired to cost in the neighborhood of $2,000,000; and a new theater for the B. F. Keith Co., to cost about $400,000.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912.

of "Brick and Clay Record," published Bi-Weekly at Chicago, Ill.....................for October, 1917.
State of Illinois }
County of Cook } SS.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Edwin G. Zorn, who, having been duly sworn according to law, deposes and says that he is the Editor of the "Brick and Clay Record," and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. that the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher: Kenfield-Leach Company.............Chicago, Ill.
Editor: Edwin G. Zorn,.........................Chicago, Ill.
Managing Editor ....None
General Manager: H. H. Rosenberg.............Chicago, Ill.
Business Manager: David B. Gibson...........Chicago, Ill.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock.)

F. B. Cozzens.............445 Plymouth Court, Chicago, Ill.
H. H. Rosenberg..........445 Plymouth Court, Chicago, Ill.
S. J. Leach................445 Plymouth Court, Chicago, Ill.
L. W. James..............445 Plymouth Court, Chicago, Ill.
F. J. Sauer................445 Plymouth Court, Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)..........None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

Edwin G. Zorn,
(Signature of editor, publisher, business manager, or owner.)
Sworn to and subscribed before me this 19th day of September, 1917.

Anna M. Phillips.
My commission expires Jan. 25th, 1920.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

---

American Ring Pulverizer Plant Moves

The sales and general offices of the American Ring Pulverizer Company have been moved with the factory and experimental laboratory from East St. Louis, Illinois, to St. Louis, Missouri.

This change was made necessary because of the ever increasing demand for the Ring Pulverizer as developed by this firm. Larger quarters became imperative and in order to improve conditions of manufacture and service to customers it was deemed advisable to remove to the city of St. Louis, where a site at 18th and Austin Streets, just south of the Union Depot was selected.

It will be recalled that the crushing machine made by the company has some exclusive features that make it particularly valuable in crushing hard, dry clays and shales. It has speed in grinding or high capacity and the mill itself is run at comparatively low speed.

The reason is partly explained by having on the end of each hammer, a ring, which produces a grinding action from centrifugal force at right angles to the horizontal shaft.

Inspection of the plant is invited, or explanatory literature will be sent upon request.

⁂

A New Type of Light Steam Shovel

The Keystone Excavator is a new, light, steam shovel that recommends itself instantly to those who have studied its features. One of its chief claims to fame is its portability, being light in weight and mounted on a long wheel base with broad traction wheels. It moves quickly, almost like a thrashing machine, and no planking is required unless the ground is not dry and solid.

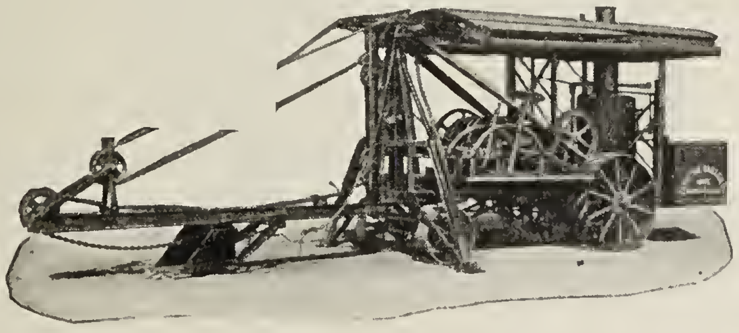
For the medium-sized plant it is particularly adaptable, because of its low first and second costs. It therefore is available to all plants that formerly believed themselves unable to own a power excavator.

It will dig easily up to 500 yards of clay in one day, depending upon conditions, and works equally well as a stripping machine or in digging the clay.

By simply rearranging the interchangeable sheaves on the boom, and the tackling to suit, and changing to the proper form of shovel, Skimmer, Dipper or Ditcher scoop, the machine can be used in three distinct ways and for many different purposes.

As a Steam Shovel Using a Dipper Scoop—It will take down and load into dump cars or wagons a bank 12 ft. high (or higher if the material will cave or can be shot down when under cut). The regular size of Dipper Scoop used holds ½ yd. The boom being 16 ft. long the material can be taken up from any point and loaded upon dump wagons at any other point within a half circle 32 ft. in diameter.

As a Stripping Machine—When so used it will take up



Using Skimmer Scoop.

CLING-SURFACE
"Look, George! It's coming right out of that shell hole!"
"You bet! With that gripping surface it can't slip!"

Slip—or go through!

CASE 1 With a gripping surface of more than half its length, the tank is almost a part of the ground. It **can't slip, for that would require more power than it does to move the load!** Did you ever think of it that way?

CASE 2 Take the simple band brake, for instance: a strip of steel encircling a drum. When drawn down tight, all that outside surface is in contact, and the drum stops. Why? **Because it takes more power to resist the brake than it does to stop the drum!**

CASE 3 Consider the slack belt. The top side of the drive drops down on the two pulleys, **increasing the arc of contact.** It is harder for the belts and pulleys to slip than to carry the load, **so they don't slip!**

Here's a belt which has been been running slack with CLING-SURFACE treatment for 12 years. Before CLING-SURFACE was used they were going to get a larger belt and bigger pulleys because this belt, run tight, slipped and would not pull the load. Instead, at a mere fraction of the cost, they treated it with CLING-SURFACE, preventing the slipping, and let it run slack. It now carries a 15% overload.

And that's exactly what the slack drive will mean for your belts—increased contact, more power delivered and slipping prevented.

All belts, and rope drives as well, on any centres, can be run easy or slack with CLINIC-SURFACE

Send for a can for 60 days' trial. We will guarantee that you'll obtain these results BEFORE you pay for it. Isn't it worth the one-minute effort to you to have this increased power with absolutely trouble-proof drives? Then write today—tear out this ad and put it on the "To be answered" pile now.

Cling-Surface the life preserver for belts TRADE MARK

Cling-Surface Company
1029 Niagara St.
Buffalo, N. Y., U. S. A.

Buy a Liberty Bond

SAY I SAW IT IN BRICK AND CLAY RECORD

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood
Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.
400 Chestnut Street
Philadelphia, Pa.

from a few inches to 6 or 8 ft. of material and leave a smooth surface at any desired grade or slope.

The Skimmer Scoop, which is the one best adapted for this work, holds about ½ yd. It will readily cut and take up any material which could be broken by a plow. The Skimmer Scoop is 31 in. wide. It has a horizontal crowding movement of 11 ft.

As a Ditch and Cellar Digger—When so used the machine is backed away from and in line with the center of the ditch being made, 7 or 8 ft. at a time. In fair material it will excavate to a depth of 14 or 16 ft, depositing the material to either side of the ditch, either on the ground or in dump cars. It can also be used for cellar digging or making narrow cuts within the above depth limit, and for general excavation below grade level. In a few instances the machine has been adapted for ditching to a maximum depth of 20 ft. by lengthening the beam on which the scoop is carried.

The drag ditcher scoop has also been used with great success in back filling.

The Keystone Driller Company, of Beaver Falls, Pa., will send complete information.

* * *

Erie Shovel Analysis

In a new descriptive catalog just issued, The Ball Engine Company, of Erie, Pa., have described in detail the features of design and construction of The Erie Steam Shovel.

Each single part, movement, design and construction is explained so thoroly that a comprehensive knowledge of the shovel is possible of attainment to the reader.

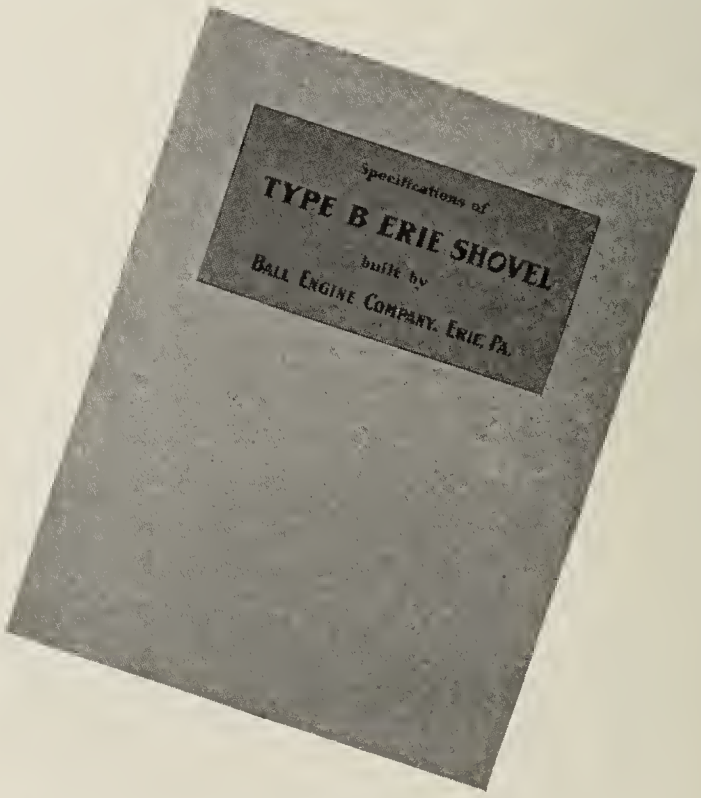
Features that are exclusively a part of the Erie are described in heavy bold face type so that a full and complete comparison can be made.

* * *

"Impervite" to Protect Thermo Couples

Another instance of the ability of American manufacturers to produce goods, which before the war was believed to be impossible, and to compete in quality and price with certain foreign-made goods, is the manufacture of "Impervite" porcelain ware by Charles Engelhard, 30 Church Street, New York, N. Y.

It is a true saying that "Necessity is the Mother of Invention." This firm, who make a specialty of high temperature pyrometers, previously used "Marquardt Mass" protecting tubes for their thermo-couples almost exclusively. When these were cut off, they found that other porcelain protecting tubes available did not afford a perfect protection to the thermo-couples, as a result of which the platinum wires from


Specifications of
TYPE B ERIE SHOVEL
built by
BALL ENGINE COMPANY, ERIE, PA.

New Catalog Fully Describing Type B Erie Shovel.

which the thermo-couples were made, did not give the service that they formerly gave when protected with Marquardt tubes.

By securing the co-operation of some of the foremost ceramic experts in the country, and after about eight months of experimentation, they have been able to produce a tube which will be known as "Impervite," for which the following claims, in comparison with the Marquardt tubes previously imported, are made:

1. The body of the two tubes, i. e. Impervite and Marquardt, is practically identical, having almost exactly the same co-efficient of expansion, the same mechanical strength, the same porosity, and both absolutely without effect upon platinum wire under high temperatures. The fusing point of the body has not been accurately determined, but is above 3,500 degs. F.

2. The glaze of the "Impervite" tube is of a different nature than Marquardt, being harder after it is matured, and having a softening point more than 100 degs. C. above the softening point of the Marquardt glaze. This glaze is thoroly impervious when uniformly applied, and strongly resistant to fluxing action. It possesses a further decided advantage, in that it does not become as sticky at high temperatures above its softening point, as does the Marquardt glaze. As a result it does not so readily adhere to an outside protecting tube when heated above the softening point, and then allowed to cool below the softening point.

The body and glaze, as used in "Impervite" tubes, lend themselves to other porcelain ware and it is understood that the facilities of the firm making the "Impervite" tubes permit the manufacture of a variety of other similar ware.

The layman who has use for pyrometers, but frequently does not thoroly understand them, does not appreciate the very great importance of using only the very highest grade of protecting tubes over his thermo-couples. Not only the accuracy, but the life of the thermo-couples very much depends upon the ability of the protecting tubes to exclude all gases, and to stand up both physically and mechanically under the furnace conditions in which they are installed.

It is now becoming common practice not only to protect thermo-couples of the platinum-rhodium and platinum-iridium group with this type of tube, but also the thermo-couples known as "base metal" thermo-couples, it having been found that the accuracy and life of base metal thermo-couples, when so protected, are very materially improved.

* * *

The Coal Tipple at Powhatan

Do you want to read an interesting story about our allied industry, coal? In Bulletin No. 322, The Link Belt Company, of Chicago, tells about a new coal tipple in the Pocahontus district.

Few people realize that a coal mine no longer consists of a dirty, wet hole in the ground, a chute, and some screens. In this book, it is shown that thousands and hundreds of thousands of dollars may be invested in "one dirty hole" and its equipment.

Very often this mine equipment is perfectly astonishing in its efficiency. Splendid power plants that generate the power to drive the mine locomotives, light the properties, run the elevators and conveyors, the screens, the crushers, and a myriad of other things, from pumps to fans. A new idea, in fact a new respect is engendered for "coal" when we know more about the new, up-to-date collieries.

A request will bring this book or any other of the Link-Belt publications.

* * *

Strange Freak of Dynamite

By J. B. Stoneking, M. E.

Recently, while sinking a new shaft on the property of the Land Lead Mining Company, at Joplin, Missouri, a peculiar incident occurred which illustrates the enormous power of dynamite, the peculiarities of rock cleavage and breakage lines, and the effect of air resistance on a rapidly whirling body.

A 5⅝ inch well drill prospect hole had been sunk previously to locate the ore bodies, and a shaft 5 ft. by 7 ft.

"On-the-Job" GANDY sings—
"You keep the home fires burning,
I'll keep the wheels a-turning,
And Victory is assured!"

"YOU captains of industry keep the home fires burning in plant, mill and mine, and leave it to me—the world's champion power and material conveyor—the original stitched cotton duck belt—to keep the wheels a-turning with a 100% production hum.

"I'm built for the job. My sinews are tough and strong. My wonderful endurance and ability to get ***all the pull from the pulley*** year in and year out in sun and rain, live steam, acid fumes and dust, make me your one best co-operator.

"Don't forget that preparedness is vital to success. Traffic conditions are not improving, so get in touch with me now for quick delivery of your belting requirements.

"Look for my painted green edge and well known GANDY trade mark to be sure you're getting the one and only GANDY stitched Cotton Duck belt.

"Order me from your mill supply house—or

THE GANDY BELTING COMPANY
732 W. Pratt St. Baltimore, Maryland
New York Branch: 36 Warren Street.

Your Coal Troubles Are Not Over

The tentative prices made by the government do not insure against shortage next winter.

You will have difficulty in securing the coal necessary to the operation of your plant.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

begun, using the well drill hole as a center line. When the bottom of the shaft was 75 feet below ground surface in solid hard limestone, the incident mentioned occurred. The cut holes, sometimes called "sump" holes, eight in number and 5 feet deep, were arranged to blast out the center cut to relieve the burden on the rib or "squaring up" holes to be drilled later. These eight cut holes were each loaded with four cartridges of 1¼-in. by 8-in. Red Cross Gelatin of 40 per cent. strength and a No. 6 electric blasting cap, making a total of 32 cartridges.

The eight holes were fired simultaneously with an electric blasting machine, and the force of the blast threw a large boulder from the bottom to a height 100 ft. above the top of the shaft. The boulder fell 50 ft. away from the center of the shaft on top of the mine car track leading to the dump, breaking and bending it out of shape. This boulder when measured was 1½ ft. thick, 3 ft. wide, and 4 ft. 6 in. long, but was somewhat irregular in shape and was estimated to contain about 16 cu. ft. A conservative estimate for the weight of this class of stone is 165 lbs. per cu. ft., which would make the total weight of the boulder approximately 2,600 lbs. As the total height of the lift was 175 ft., the work done represents the expenditure of 455,000 ft. lbs., of energy, or 17,344 ft. lbs. per cartridge of dynamite. This is not by any means the total energy in the dynamite, for such important items as the energy required to disrupt the cohesion of the rock particles, the enormous wind resistance against the hurling of this immense boulder thru the air, and that represented in the shaft, are entirely unknown values and are not computable, but they all go to show the vast amount of energy contained in dynamite for the performance of useful work.

Ordinarily, when subjected to a violent rending and disruptive force, a rock will break at the weakest point, and often in some classes of work, holes are drilled along the line where it is desired for the rock to break so as to weaken it along the projected line. A peculiar feature of this blast is that although there was a large hole, 5⅝ inches in diameter in the center, the rock did not disrupt or break along an imaginary line drawn through this center hole, which might be theoretically taken as the weakest part. This boulder came out and landed with the well drill hole intact through the 18 inches of thickness, and not even a crack was found radiating outward from the center.

Another peculiar feature of this boulder's freak performance was that it rose to the top of the flight without any twisting or whirling, but at the start of its descent it began whirling rapidly, and this whirling action caused it to curve outward and land 50 ft. away from the shaft.

Since the boulder did not strike the sides of the shaft in the upward course, as evidenced by its not whirling, the line was practicallly perpendicular, or, at the maximum, a very slight angle from the vertical. Taking the maximum angle which would allow the boulder to clear the collar of the shaft without touching, the point at which it would have struck the ground should be 20 ft. from the shaft. The influence of the air on a rapidly whirling body is here strikingly shown, for the difference between 20 and 50 ft. gives 30 ft. as the horizontal effect of the curvature in the descending flight.

Many strange features, of which this incident is an example, occur when enormous forces are loosed, and when they work opposed to natural forces and subject to the laws of physics.

⁂

The Walter A. Zelnicker Supply Company, of St. Louis has recently secured the services of W. H. Bramman, who is acting in the capacity of assistant to the president.

Before becoming associated with the Zelnicker Supply Company, Mr. Brammen was connected with The American Carbon and Battery Company.

⁂

The Excelsior Tool and Machine Company, of East St. Louis, Ill., will soon be in a position to furnish a Ring-Pulverizer for grinding and pulverizing coal, limestone, grog, bats, clay, shales and other hard substances to any desired mesh.

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other Tuesday by

Kenfield-Leach Company
610 Federal Street Chicago

Chicago, November 6, 1917
Vol. 51 No. 10

Leading Articles in This Issue

Are You Doing Your Share?........836
Strength of Monolithic Pavements as Affected by Brick's Physical Properties........838
The Brick Knockers Club........843
Salt Glazing Vitrified Hollow Ware........846
A Fireside Argument........852
Using the Hot Gases from Burning Kilns to Dry Clay Ware........855
Brickmaking in Australia........858
Rate Fundamentals and Tariff Interpretations........860

⁂

The Editor's Corner........837

⁂

Special Departments

Machinery and Equipment........885
Pottery Notes........878
Questions and Answers........864
The Superintendent........861
Wake of the News........866

American Clay Mchy.887, 890
American Pulverizer Co. ....Front Cover

Baird M. & Mfg. Co........869
Ball Engine Co........881
Barber-Greene Co........880
Barrett Company........893
Beighlee Electric Co........873
Bell Locomotive Works....872
Black Diamond........886
Blairsville Machine Co........866
Bonnot Co........824
Boss Co., J. C........865
Brewer & Co., H........907
Bristol Co........866
Broderick & Bascom........863
Brown Instrument Co........834
Buckeye Traction Ditcher Co........885

Canton Grate Co........874
Celite Products Co........865
Chambers Bros Co........827
Chase Fdry. & Mfg. Co....897
Clarage Fan Co........862
Classified Ads........909, 910
Cleveland Alloys Co........894
Cork Insert Co........877
Crescent Belt Fastener........863
Crimora Manganese........865
Cyclone Grate Bar Co........871

Didier-March Co........902
Drymore System........870
Duplex Truck Co........871
Du Pont Powder Co........882

Engelhard, Chas........901
Erie Steam Shovel Co........881
Exner, J. E........875

Fate Co., The J. D........911
Freese & Co., E. M........905

Gandy Belting Co........879
Garnet Co........894
General Electric Co........833
General Store........894
Goodrich Co., B. F........862
Goodyear Tire & Rubber Co........830

Hardinge Bros., Inc........863
Harris Bros. Co........909
Hendrick Mfg. Co........897
Hettrick Mfg. Co........867
Hill Clutch Co........865
Homestead Valve Mfg........894

International Clay Mchy..829

Jackson & Church Co........884

K-B Pulverizer Co........864
Keystone Driller Co........875
Kissel Motor Car Co........876

Lakewood Engr. Co........900
Lincoln Electric Co........831
Link-Belt Company........832

Main Belting Co........825
Manufacturers Equipment.826
Marion Machine Fdry. & Supply Co........864
Marion Steam Shovel........869
Martinique Hotel........866
Morgan Co., F. W........862
Morse Chain Co........903

Ohio Filler & Shield Co..870
Ohio Galv. & Mfg. Co....898
Orenstein-Arthur Koppel..878
Osgood Company........897
Owens Continuous Tunnel Kiln Co........894

Philadelphia Textile Machinery Co........Back Cover
Potts & Co., C. & A........828
Price Electric Co........864

Roessler & Haslacher........872
Rollin Chemical Co........874

Sanderson-Cyclone Drill....864
Sauerman Bros........862
Sawyer Belting Co........900
Scandinavia Belting Co....862
Schofield-Burkett........902
Smith Co., Claude........823
Standard Dry Kiln Co........868
Steele & Sons, J. C........906
Stupakoff Laboratories........865

Taylor Instrument Co........867
Thew Auto-Shovel Co........901
Thwing Instrument........868
Trade Names........891
Trautwein Dryer & Engineering Co........823

Union Chain & Mfg. Co....862

Victor Balata & Textile Belting Co........897

Wallace Mfg. Co........904
Watt Mining Car Wheel..898
Webner, Frank E........894
Weller Mfg. Co........822
Westinghouse Electric & Mfg. Co........899
Williams & Co., C. K........862
Wood & Co., R. D........883

Youngstown Steel Car........873

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

Are You Doing Your Share?

I

Are you doing your share in the work being done?
Of the myriad burdens, are you bearing one?
Are you giving your strength where it's needed the most?
In the mobilized millions, are you at your post?
There are men like you needed, today, everywhere—
Are you doing your share?

II

Perhaps with your wealth you are rendering aid,
To the men who are fighting for you, unafraid;
It's part of the duty the nation demands,
In freeing the world from tyrannical hands;
But what are you sending of self over there?
Are you doing your share?

III

It's easy to feel you are taking a part,
By helping and cheering the boys as they start,
It's easy to give, and the giving is right,
But the call is for all of your God-given might;
Look into your heart, do you see written there,
That you're doing your share?

IV

The war can't be won without giving your all,
They're calling from Flanders, Oh God! how they call.
While they're making for you the supreme sacrifice,
While you're counting the cost, they are paying the price.
Do more than you're doing for them over there—
Do more, do more than your "share."

—*Frank Adams Mitchell.*

The EDITOR'S CORNER

Give These Facts Wide Publicity

ON SEPTEMBER 20 at a general mass meeting of builders, financiers, architects and investors, called by Hon. Marcus M. Marks, president of the Borough of Manhattan, New York City, held in the Municipal Building, to patriotically discuss and decide upon corrective measures for relieving the dearth of rentable space in residential, commercial, and industrial New York, a committee was appointed to make an investigation and report on supply and prices of building materials.

This committee has completed its work and in a summary of its report says that it would seem the causes of the present stagnation of building construction are: First, the general expectancy that there will be a drop in the prices of building materials following the enforced lowering of prices by the government on steel and coal. Second, uncertainty of deliveries. Third, uncertainty regarding whether realty values will be sustained or kept from going to abnormal bounds thru action of investors seeking to build structures not requiring steel in the new suburban territories within the city limits reached or soon to be reached by the new subway system.

In giving its opinion as to the possibilities of developments which would alleviate these conditions the committee says:

First, it is an established fact, now officially ascertained, that building material prices will be at or above present levels for many years to come.

Second, consideration should be given to the investigation of railroad conditions to discover how long embargoes and delayed haulage may be expected after the crops had been moved. Manufacturers will ship on time, but they need cars to do it.

Third, consideration should be given to an investigation of ways and means of protecting investment building enterprises from manipulation of book values, either by some form of insurance, legislative enactments or extension of the zoning law principle applied to tax valuations until new territories can be developed and consideration of all kinds can proceed to forestall the day of possible space famine.

Of course, without a doubt, the most interesting of the above facts is that which points conclusively to the maintenance of present price levels for building materials for some time to come. This certainly takes away the excuse which has been advanced by hundreds, yes thousands, of prospective builders who are not proceeding at once with their plans. Wide publicity should be given by every clay products manufacturer to this conclusion which has been reached by an officially appointed committee of capable men who have made an exhaustive investigation of this matter as it affects the largest city in the United States.

⁂

The War A Stimulant To Inventive Genius

THERE IS AT LEAST one good thing which the war seems to have accomplished for American industry and that is, it has proved to be a powerful stimulant to research and investigation with a view toward finding out new ways and means to perform operations now seriously hindered by labor, fuel or raw materials shortage.

In the clayworking industry much attention is being given to burning methods, particularly with regard to the type of fuel. Coal at present prices and with the existing handicaps surrounding its delivery has made many a plant owner pause to consider the possibility of a more restricted use of this fuel, or its use in a more economical form.

Spurred on by the industry's acute pains in the region of the pocket book, ceramic engineers are inquiring diligently into the merits of oil, producer gas and powdered coal for firing kilns. It is a good thing and is bound to result in a better equipped industry when the war is over.

⁂

Convention Time Is Here Again

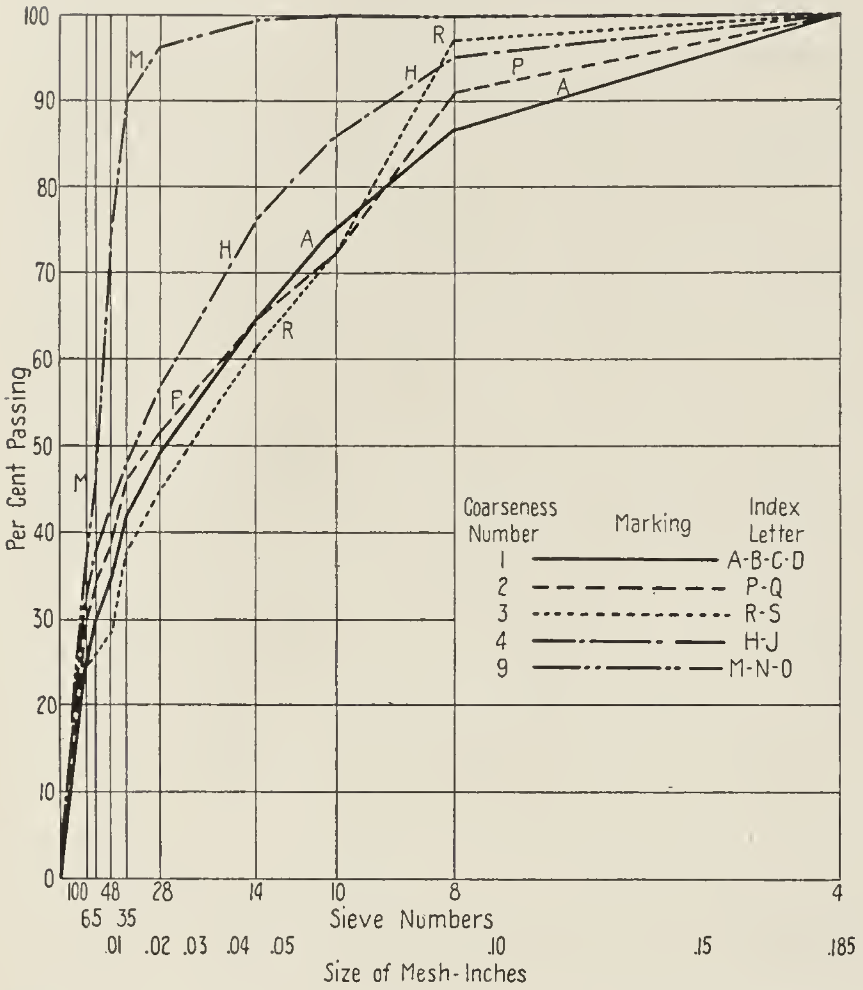
WITH THIS MONTH is ushered in the season for annual conventions, semi-annual meetings and other periodic gatherings in the clayworking industry. It is a time when old acquaintanceships are renewed and new friendships are made. The coming together of manufacturers from all over the country to various points will as usual result in an interchange of experiences and information bringing great benefit to the business. But to just what extent this will take place during the present convention season and the amount of value that clayworkers will get from their annual meetings will depend largely upon the wisdom and foresight of association leaders in preparing the programs.

Great care should be exercised in selecting topics that are of most interest at the present time and under present conditions. Labor problems, fuel perplexities, traffic troubles, building conditions and many other timely topics will offer a large amount of good material for enlightening discussions.

STRENGTH *of* MON
as AFFECTED *by* BRICK

The Tests Outlined in the Following Article, Made on Nearly One Hundred Representative Samples of Paving Brick, Show the Tendency of a Rough Surface, Not Too Highly Vitrified, to Increase the Strength of the Monolithic Slab.

By Ralph



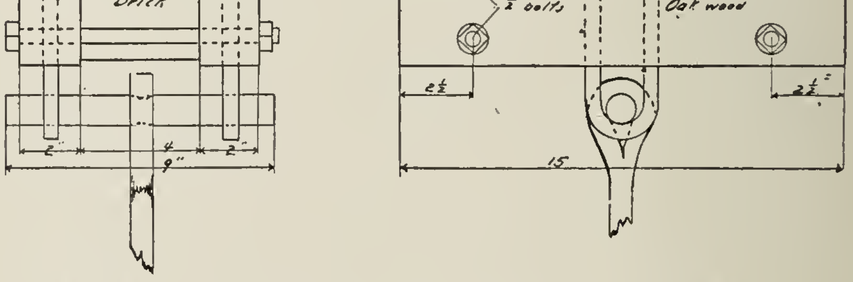
Curve 1—The Coarseness of Grain as Revealed by the Sieve Analysis of Five Different Clays, the Samples of Which Were Taken Just as They Were Entering the Pugmill.

THE DATA SET FORTH in the accompanying tables and charts presents the results of an extended series of tests on paving brick conducted at the University of Illinois. These tests were made with the purpose of ascertaining, if possible, something as to the relation existing between the degree of coarseness of grinding of the shale used, the character of the surface obtained on the finished product, and the tensile bond between this surface and cement grout.

Compression, transverse bending, and rattler tests were made as checks. These give some information as to the relative merits of wire-cut-lug and repressed blocks. A short series of tests was also made to determine the strength of bond between the base and wearing surface of the monolithic construction, of the cement-sand bed, thin dry mortar bed, and direct contact types. All values given, with the exception of those from the rattler tests, are the average of at least three test specimens.

The bond tests were made by fastening the brick in a specially constructed clamp, shown on the right, and then applying the load at a very slow rate in an Olsen testing machine. The transverse bending tests were made in a similar machine, using a jig to insure even spacing and loading. The bearings of this jig were six inches apart and the load was applied thru a one-half-inch square bar laid across the upper surface at the center. The compression tests were made in a 600,000-pound Riehle testing machine, the load being applied at slow speed. In both the compression and transverse bending tests the bearing surfaces were bedded in plaster of Paris, the pure material being used for the transverse bending tests and a mixture of one part of plaster of Paris to five parts of cement for compression tests.

The sand used for the most of the bond tests was a clean, silicious material obtained from Lincoln, Ill., of sufficient fineness that all would pass a one-sixteenth-inch sieve. This was very easy to work and made a very smooth and free-flowing grout. No trouble from separation was experienced, even when using the leaner mixes. Some tests were also made with a well-graded sand which would all pass a one-eighth-inch sieve. This material made a strong grout, but there was a decided tendency toward separation unless the mixture was constantly



The Specially Constructed Clamp, Used to Test the Bond Strength of a Monolithic Slab.

ITHIC PAVEMENTS
HYSICAL PROPERTIES

These Tests Also Demonstrate the Fact that the Strength of the Monolithic Pavement is Immeasureably Weakened When Even a Thin Layer of Dry Mixed Cement and Sand is Spread Between the Surface of the Brick Pavement and Its Base.

P. Brown

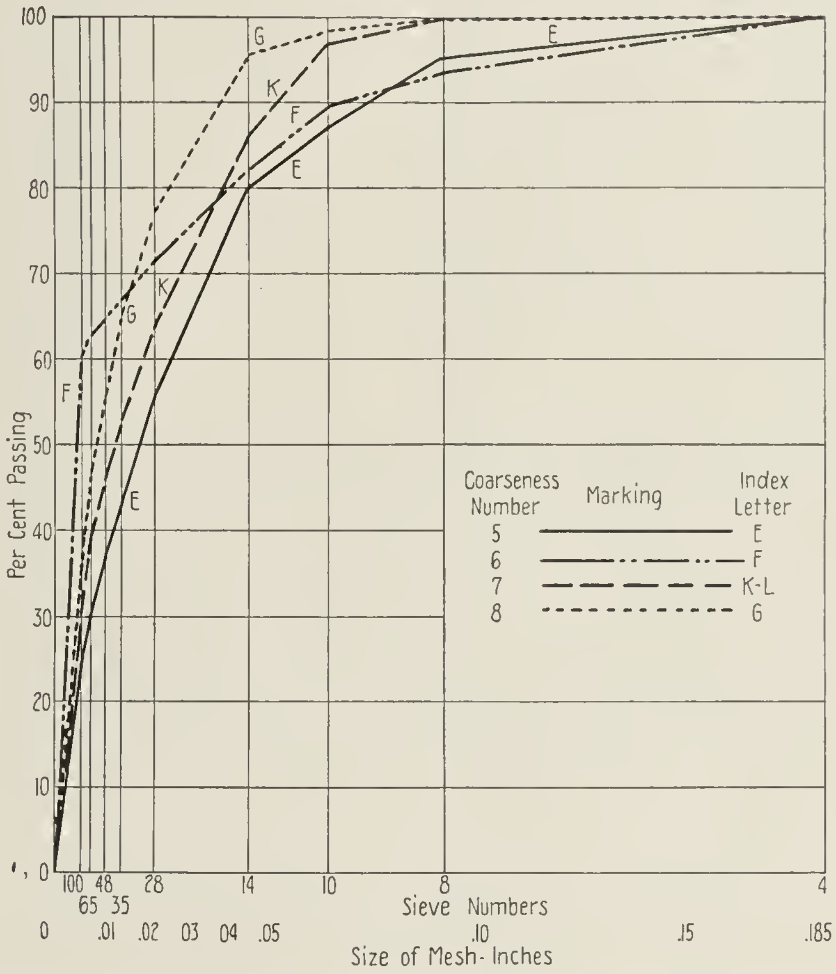
stirred. Chicago AA Portland cement was used in all tests. All grout was proportioned by weight, twenty-six per cent. of water being used.

As a check on the character of the grout, standard briquettes were made and tested at twenty-eight days. These tests showed the grout to be quite uniform, the average strength being 408 pounds per square inch. These briquettes were made by pouring the grout into the molds and allowing it to set without being compacted.

TABLE 1.
RELATION BETWEEN DEGREE OF COARSENESS AND BOND.

Index Letter	No.	Deg. of Coarseness	Bond lbs. per sq. in.	Character of Surface
A	1	1	127.3	Rough and ragged
C	2	1	111.2	Rough and ragged
R	3	3	111.1	Rough.
K	4	7	107.1	Rough.
P	5	2	106.1	Rough.
E	6	5	98.1	Fine cut rough.
H	7	4	96.1	Medium rough.
M	8	9	95.1	Medium rough.
F	9	6	87.9	Rough and highly vitrified.
S-R	10	3	78.2	Gritty glaze, raised lug, indented name.
L-R	11	7	77.7	Fine cut, semi-glaze. raised lug, indented name.
G	12	8	72.8	Fine cut roughness, highly vitrified.
O-R	13	9	56.9	Medium glaze. raised lug, indented name.
D-R	14	1	50.8	Smooth glaze, raised lug, no name.
Q-R	15	2	50.2	Smooth glaze, raised lug, raised name.
B-R	16	1	44.4	Smooth glaze, raised lug, no name.
J-R	17	4	43.7	Smooth glaze, raised lug, indented name.

R distinguishes repressed from Wire-Cut brick.



Curve 2, Showing the Sieve Analysis of Four Clays, the Samples of Which Were Taken Just as the Clay Was Entering the Pugmill.

Tensile tests were also made on samples of burned shale from plant G and showed an average strength of 1,176 pounds per square inch.

GRINDING DOES AFFECT STRENGTH OF BOND

From an examination of the data in the accompanying tables it will be seen that a relation does exist between the degree of coarseness of grinding and the bond. This relation may not appear to be direct, but upon a close examination of the brick themselves it becomes evident that it is practically direct, so far as wire-cut-lug brick are concerned. This result is undoubtedly due to the fact that the wires used in cutting the brick tear the shale, making a rough surface to which the grout can bond, and the coarser the grinding, the greater the tearing, and consequently the rougher the surface. The relation in question does not, however, hold true in the case of repressed blocks since the repressing destroys the roughing effect of the wire-cutting.

This relation, however, is affected to a greater or less extent by the degree of vitrification obtained in the burning, and this factor must be considered in studying the results. For example, take block P (Table 1). This block stands fifth in bonding value, but is second for coarseness. According to the theory advanced above, it should rank higher in bonding value, but upon examination it will be seen that while the surface is rough and ragged, each particle is highly vitrified, which gives a glassy surface to which the grout does not adhere well, with the result that the bonding value of the surface is low. The same is true of Block H, altho to a less marked degree. Another example of the effect of glazing is exhibited by Block G. This block, according to the theory, should rank next to last in the wire-cut-lug series; however, it is actually found further down the scale in the repressed series. This brick (G) has a shiny and pleasing appearance and is well shaped and smoothly cut. However, each particle on the wire-cut sides is highly glazed and consequently affords little bonding strength. The natural roughness of the surface is all that prevents it from ranking even lower than it does. It is therefore evident that not only the roughness of the surface, but the intrinsic character of the surface as well, affects the bond.

TABLE 2.

COMPARISON BETWEEN REPRESSED AND WIRE-CUT-LUG BLOCKS AS TO TRANSVERSE STRENGTH.

Index Letter.	Number.	Transverse Strength Lbs. per Sq. In.
K	1	3,043
S-R	2	2,832
R	3	2,577
Q-R	4	2,390
D-R	5	2,362
O-R	6	2,350
L-R	7	2,327
J-R	8	2,124
E	9	2,094
F	10	2,063
M	11	2,053
A	12	1,896
P	13	1,882
G	14	1,828
H	15	1,712

Thus we see that a rough and ragged wire-cut-lug surface, such as exhibited by Blocks A and R, is a distinct advantage in obtaining the high bond desired by advocates of grout filled brick pavements.

"FACE POWDER" WEAKENS MONOLITHIC SLAB

Some interesting facts appear in Table 4. It will be seen that the bond between the green concrete and the face of the brick varies with the richness of the mortar. If, however, a thin layer of dry mixed cement and sand is spread over the surface as a smoothing coat, as is customary in some localities, the bond drops to about one-fourth of that developed with green concrete. This dry mix is in the same proportions as is the mortar in the concrete and so should appear to give the same bond. However, it is impossible to obtain as thoro a coating of the sand grains when the mixing is dry as when wet.

Consequently, there is not as continuous a film of cement in contact with the brick surface, and as a result the bond is weaker. In the case of the thick cement-sand bed the bed bonded to the brick, but did not adhere to the concrete below. This prevented a testing being made as it was impossible to handle the specimens. These bond tests were made on only one kind of brick, but the face of all kinds is so similar that the results may be safely taken as representative.

It may be well to consider the data shown in Table 5 with reference to the relation between the strength of bond and the richness of the grout. It will be noticed that in Blocks A, C, and E the bond decreases quite rapidly as the grout becomes leaner, but in Blocks B-R and D-R the reverse is true. Just why this should occur the writer is unable to state at present. However, the relation appears to hold and it is the writer's opinion that further tests should be conducted in order to ascertain whether this holds true under all conditions.

There are several important factors which must be considered when deciding on the kind of sand to use for grout. The finer the sand, the easier it is to mix the grout. With fine sand there is very little trouble from separation, even with the leaner mixes. Consequently, more water may be added, which makes it easier to fill the joints completely, leaving no joints which are bridged across over the upper third. A thin, smooth, and free-flowing grout is sure to go down and fill the joints from the bottom up. With this kind of grout it is possible to use brick which have small lugs, which effect a saving in the amount of cement used. However, it is the writer's opinion that the use of lugs which do not provide for a separation of at least a quarter of an inch is dangerous for the reason that a single thick batch of grout may cause the joints to be bridged, or partially filled, over a considerable area.

If a coarse sand is used, great care must be exercised to avoid separation when the mix is thin enough to flow properly. Coarse sand should never be used unless there is plenty of space between the brick, as the larger grains may catch and cause bridging very easily. No matter what kind of sand is used, care should be taken to see that the first coat is thin enough to flow freely and penetrate all joints to the bottom. This will insure a good bond and a solid filler, which utilizes the full strength of the brick, with the result that the pavement is stronger and more permanent.

The relation between coarseness and physical properties is not so apparent in the rattler tests, transverse bending, or the compressive strength, altho considerable data was gathered and the results carefully studied.

REPRESSED HAVE GREATER TRANSVERSE STRENGTH

An interesting feature is brought out in the transverse bending tests; namely, that the repressed blocks have a higher strength than the wire-cut-lug brick (Table 2). This is probably due to the fact that the wires used in cutting the brick tear the surface and thus cause slight nicks, which are incipient cracks and hence offer a weaker plane than the smooth, dense surface of repressed blocks, with the result that fracture occurs at a lighter load.

TABLE 3.

RELATION BETWEEN RATTLER AND COMPRESSION TESTS.

Index. Letter.	Number.	Compression Number.	Rattler Per Cent. Loss.	Compression Lbs. Per Sq. In.
A	1	4	15.12	12,640
Q-R	2	5	15.12	12,260
F	3	2	15.50	12,953
D-R	4	14	16.05	8,670
K	5	8	16.25	11,580
S-R	6	1	16.32	12,963
G	7	3	16.45	12,690
P	8	7	16.55	11,710
O-R	9	9	16.78	11,350
J-R	10	12	17.48	11,067
E	11	13	17.55	10,913
R	12	6	18.01	11,803
H	13	11	18.46	11,127
M	14	10	19.01	11,330
L-R	15	15	19.61	8,533

While making the compression tests it was noticed that in every instance the outer half of all repressed blocks flaked off at a light load, usually about one-fourth the total load. This is probably due to the fact that the bond of the shale was weakened by the repressing process. The remainder of the brick withstood the load well, however, and it cannot be said as a general rule that wire-cut-lug brick are stronger in compression than repressed, nor vice versa. Data showing the ultimate crushing strength of the brick tested is shown in Table 3.

The rattler test is one which has occasioned much discussion. Some writers claim that it is of no value, while others stoutly maintain its superiority over all other tests. A study of the data shown in Table 3 will bring out a feature which may be worth consideration. It will be noticed that there is some relation between the values obtained for the rattler and those for compressive strength. While this relation is not absolute it does show that in general the lower the rattler loss, the higher the compressive strength.

This relation, however, does not hold in the case of transverse bending. The primary object of a rattler test is to obtain an idea of the hardness and toughness of the brick. Frequently a test will show a very low average loss, but several individual brick may be very soft and lose a great deal, while others may be very hard and tough and lose but little, giving a low average. Such a sample may pass specifications, but the brick themselves will not wear as well in the pavement as would a lot which perhaps lost more, but with each brick in the test losing nearly the same percentage.

In other words, the writer believes that a uniformity factor should be introduced into the standard specifications. If the loss of individual brick were restricted to three or four per cent. either way from the average it would insure a more uniform run of brick and consequently a pavement which would wear more evenly and remain smooth much longer. The rattler test is valuable at the plant for it serves as a constant check on the uniformity of the product, and it is the aim of all manufacturers now to obtain a brick of uniform excellence.

OPPORTUNITIES FOR RESEARCH AND DEVELOPMENT

In conclusion, a word may well be said regarding the need of further research into the various phases of the brick industry other than the ceramic processes. For example, more tests might well be made on monolithic construction. Many such have been made at the University of Illinois and more are under way, but the field is very broad. Then also, very little data is at present available about temperature changes and expansion, etc. Time and motion studies might also be made for the purpose of simplifying the actual construction on the road. If such results are available they should be published and thus give others a chance to profit by them.

TABLE 4.

BOND BETWEEN DIFFERENT TYPES OF BASE AND BRICK. BLOCK A USED.

Bonding Surface	Bond Lbs. per sq. in.
1:3:5 green concrete	82.0
3/16-inch layer of 1:3 dry mix laid on 1:3:5 green concrete	21.8
1:2½:4 green concrete	86.0
1-inch layer of 1:3 dry mix laid on 1:3:5 green concrete	0.00*

*In this instance the brick bonded to the mortar bed but the bond between the bed and the concrete base was not sufficient to permit handling of the specimens.

All these tests were cured by covering with sand and keeping the sand wet for 26 days. They were broken 28 days after construction.

TABLE 5.

RELATION BETWEEN AMOUNT OF CEMENT IN GROUT AND BONDING STRENGTH.

Mix.	Block.	Sand.	Bond.
1:1	A	Lincoln No. 16	127.3
1:1½	A	Lincoln No. 16	82.6
1:2	A	Lincoln No. 16	55.4
1:1	B-R	Lincoln No. 16	44.4
1:1½	B-R	Lincoln No. 16	55.4
1:1	C	Lincoln No. 16	111.2
1:1½	C	Lincoln No. 16	84.9
1:1	D-R	Lincoln No. 16	50.8
1:1½	D-R	Lincoln No. 16	50.4
1:2	D-R	Lincoln No. 16	59.3
1:1	E	Lincoln No. 16	98.1
1:1½	E	Lincoln No. 16	84.2
1:1	A	⅛ inch	121.9

Editor's Note: Each of the letters used in the above article represents a well-known paving brick, manufactured in the Central States. Letters have been used in place of names in order not to divulge information of a confidential nature. However, Brick and Clay Record has on file the names of the companies manufacturing the brick used in these tests and will gladly supply the letter representing their product to those manufacturers whose brick have been used and who write in for this information.

⁂

Program for Paving Brick Convention

While a complete and detailed program covering the annual meeting of the National Paving Brick Manufacturers' Association at Cleveland, Ohio, November 19 and 20, is not as yet available, it is announced that it will include the usual official reports and special attention will be given the following subjects:

First—The high cost of production.

Second—The great shortage of transportation facilities.

Third—The great lack of competent dependable contractors.

Fourth—Low estimates where the law forbids the awarding of contracts on bids in excess of certain limitations.

Fifth—The special want of sufficient funds for a campaign for national advertising.

In view of the many problems which present day conditions have forced upon paving brick manufacturers, it behooves every maker of that commodity to pack his grip and catch a train for Cleveland in time to arrive at the opening session the morning of the nineteenth.

⁂

Bureau of Mines Ceramic Station Under Way

Plans for the new ceramic station to be constructed and utilized by the United States Bureau of Mines, have been completed by the architects' department of the Ohio State University. The station was authorized by the government in August under the agreement that the state university was to furnish the building and the Bureau of Mines to appropriate $25,000 for equipment and employes. The building is to be erected under a law which provides for the establishment of seven such stations, one branch to be devoted to ceramics.

By building up the ceramic industry of the country it is hoped to place American products before the people and thus exclude imported goods in all lines of the clay-working industry. The structure is to adjoin Lord Hall and will be three stories high. On the first floor will be ercted two modern kilns and a drying tunnel. Four large laboratories will be located on the second floor and the third floor will be occupied by two laboratories and offices of the station. R. T. Stull will be in charge of the new station as announced in a previous issue of *Brick and Clay Record.*

Is Your Motor Truck an Asset or a Liability

NO MAN runs a summer hotel from choice. He would make a year-round resort of it if the change in season did not render it impossible to secure a twelve-months' patronage. But the cooking facilities and the accommodations for help and patrons must be as great during the entire year as they are for the two or three months of the "season." In other words, interest on the investment, taxes and insurance payments continue for twelve months, while the return on the investment is obtainable only for about one-fourth of that time. To be sure the *running* expense ceases during the closed months, but the deterioration and other fixed charges continue the same; hence, the comparatively high rates for accommodations which must be charged during the short time that the hotel can be operated on a paying basis.

You do if you employ a five-ton truck to haul ten tons a distance of only a few miles and can find no paying work for the truck to do during the remainder of the day. Your depreciation continues to a certain extent, and your insurance, interest on the investment, and other fixed charges are the same whether the truck is idle or is carrying a paying load. It is not merely a matter of keeping the truck busy, for this could be accomplished by making more trips with only a third or quarter-capacity load. But such an arrangement would obviously be as inefficient as hiring a ten-thousand-a- year executive to do a day-laborer's work.

In general, if the nature of the load is such that it can be divided into smaller allotments, a business of this nature could much better employ a one or two-ton truck which would make a greater number of trips. Such a truck would be capable of higher speed, its gasoline, tire and other upkeep charges would be less and the initial investment represented so much lower that an appreciable amount could be saved on the interest paid

However, such conditions can only be determined by a thoro analysis of the situation. For example, it is possible that a business employing a five-ton truck for its daily haul of but ten tons is approaching such a stage of expansion that the full-time use of the truck at its rated capacity can be foreseen in a few months. Under these circumstances, it might prove more economical to invest in the larger truck which will be certain to furnish adequate service for a year or so, rather than to purchase additional smaller trucks as they are needed. The wisdom of such a course will depend upon the ease with which drivers can be secured and the nature of the work of each.

OVERLOAD IS MOST COSTLY CONDITION

Inefficient as is the use of a five-ton truck for performing two or three-ton work, it is not one-half as costly as is even a moderate overload carried continually on any commercial vehicle. Overloading, as has been pointed out, is the great evil of the average truck installation, and as soon as the rated capacity of a truck is exceeded, wear on tires, bearings and other mechanical parts increases out of all proportion to the excess load. It even happens that under certain conditions one truck may need to be much heavier and sturdier than another of the same capacity, used under less severe conditions. For example, the new standardized truck recently adopted by the United States Government for army purposes is said to weigh some one thousand pounds more than our ordinary commercial vehicles of equal capacity. This excess weight is applied to added strength of parts subjected to the increased strain caused by the vibration dependent upon travel over rough roads. Trucks which are not called upon to meet with such road—or roadless—conditions would be carrying an unnecessary dead weight of one thousand pounds were these army vehicles used in ordinary commercial service. Therefore, even tho these United States army trucks are supposed to be the best, they are the best only for the purpose for which they have been produced, and many trucks on the market, made with less care and with poorer materials, would out-perform them at the end of each month when the service records and costs per ton-mile are figured out.

The cost-keeping system which will take into consideration all of these factors and which will include every other element affecting the cost of transportation will solve many a hauling problem and will show the operators where serious losses and leaks may be stopped. To devise a standardized system, however, is a difficult matter, for different methods, each of which may be mathematically correct, will vary as much as 20 or 30 per cent. in the hauling costs which they show. In view of this need, it is to be hoped that truck manufacturers' associations, as well as organizations composed of truck owners, will co-operate with a view to securing a standardized method of maintaining truck-operating costs, so that the truck owner may, at the expiration of a month's trial, be able to tell at a glance whether his system is operating as economically and efficiently as his investment would warrant.

A COST ITEM NOT USUALLY CONSIDERED

There is one other item of truck maintenance, however, not included in the average cost-keeping system. This applies to the service rendered by the local dealers for the truck under consideration, or by the factory branch. Labor costs in such a service station may be the same as those in any public garage, but the greater familiarity of the mechanics with the particular make of truck for which their employer is agent enables work to be done much more efficiently. Of course, a truck is solely a business proposition, and every day it is out of commission represents a total loss to its owner, and the ease with which spare parts may be obtained and replaced, is, therefore, of great importance. These considerations alone should be sufficient to decide a prospective purchaser in favor of one make of truck or of another, provided each bears a good reputation as to design and endurance and is made by a reputable company.—*Leslie's Weekly.*

* * *

Face Brick Association Annual

The Executive Committee of the Board of Directors of the American Face Brick Association will meet on Wednesday, November 7, to decide the time and place for the next annual meeting. The board of directors has empowered the Executive Committee to make the choice and full announcement from the secretary-treasurer's office shortly will be given to face brick manufacturers.

A complete announcement of the meeting, including a statement of time and place will no doubt appear in the November 20 issue of *Brick and Clay Record.*

The BRICK KNOCKERS CLUB

I SUPPOSE YOU NOTICED THAT WHITE SCUM UNDER THE CORNICE? WELL! IT WONT BE SO VERY LONG UNTIL TH' WHOLE BUILDING WILL LOOK JUST THAT WAY.
?
WILLIAMS

Alkali Pete

WHAT! YOU DONT MEAN TO TELL ME YOU WERE SUCKER ENOUGH TO PAY TWENTY DOLLARS A THOUSAND FOR A BRICK LIKE THIS?

Old Doc Anvil

YOU KNOW, MR ARCHITECT THERE ARE TRICKS IN ALL TRADES.

Henry the Second

Some Candidates and Their Qualifications for Membership

By Joseph P. Sullivan

Wisconsin Lime and Cement Co., Chicago.

ALKALI PETE

Pete's specialty is spouting efflorescence, and he sure does go about it in a reckless and abandoned manner. His "Hated Rival" has just about landed a job on a classy, high grade, dry pressed brick. The fact that the brick is all that is claimed for it does not faze Peter, for something is going on in the back of his head. He gets busy and urges Mr. Homebuilder to jump in his flivver, as he has something interesting to show him. The "something interesting" is a "horrible example" of a job served by his "Hated Rival." Arriving on the scene Peter points to a spot under the cornice, that shows a white scum, and proceeds to inform Mr. Homebuilder that in time the whole wall will take on a whitewashed appearance. Peter forgets to mention anything about the leaky tin cornice. Oh my yes! He was too busily engaged just then in sowing the seed of suspicion in Mr. Homebuilder's mind.

The seed has taken root. Peter's competitor is now put on the defensive. He has been handicapped by the uncleanest of sales methods, viz., *knocking.*

Mr. Homebuilder is going to ask him for a guarantee that a wall constructed from his brick will not effloresce under any conditions. He will be denied the opportunity to explain the constructional faults in the building, such as the leaky tin cornice; for Mr. Homebuilder is not the contented and trustful man that he was before he made the unfortunate acquaintance of Alkali Pete. He eyes with suspicion any and all face brick salesmen and their wares, and begins to figure out what a big mistake he made in planning to build with brick.

Alkali Pete has committed the overt act. He has torpedoed the good ship "Sales Ethics."

OLD DOC ANVIL

Doc's qualifications for membership are unquestionable. He is particularly adept with the mallet. Mr. Smith has let contracts on his apartment building, and is about to make his selection of face brick. It looks as tho Doc's competitor is going to bring home the bacon. Well, if he does he will find that the pathway home is not strewn with roses. Mr. Smith shows Doc the brick that his competitor has submitted, and expresses his satisfaction with the brick and the price quoted, which was $20 per thousand.

Here is where Doc starts his Jolly Blacksmith's lay. "Twenty dollars per thousand!" shrieks Doc. "Why Jones over on the corner of Oak and Polk Streets bought the same brick for $17 per thousand, and that is more than they are worth." At any rate, who is getting the other $3 per thousand? Well, Mr. Smith investigates and learns that Jones did buy the same brick for $17 per thousand, and he also recalls that his contractor had recommended the brick very highly.

The plot thickens. On his way home that night who does he meet coming out of a cigar store but his contractor and Doc's competitor, arm in arm. Quick Watson, a clue! What do you think those fellows could be doing in a cigar store? Why that's simple; they were in that cigar store congratulating themselves on the easy manner in which they were going to separate Mr. Smith from that extra $3 per thousand. Marvelous! So you can hardly blame Mr. Smith for being careful to store away the family silver, and other valuables that might be lying around loose, when Doc's competitor or the contractor ring his front door bell. For you know, Old Doc Anvil was careful to withhold from Mr. Smith the information that all face brick, including his own, had advanced in price $2 to $3 per thousand since the time that Mr. Jones had purchased his brick.

But Doc was after Mr. Smith's job and he was going to land that job by hook or by crook. What did he care whose reputation suffered in consequence of his insinuations. He has put things in Mr. Smith's mind that have discredited the face brick business in general. He has put the contractor in an unenviable position, for he has to prove to Mr. Smith that his recommendation of the brick was not prompted by mercenary motives.

All of which ought to make Old Doc Anvil eligible for membership in the Brick Knockers Club.

HENRY the SECOND

Hen is always taking the joy out of life, particularly the life of the honest, on the square face brick salesmen. Hen is always raving about Seconds. When he gets around to the job with his samples, instead of talking about the qualities of his brick, and the service that goes with them, he starts in by searching for flaws in the samples submitted by his competitor. After the smoke clears away Mr. Architect informs Hen that he has adopted his competitor's brick since he is well pleased with the price, and the shade just fitted in with his color scheme.

Hen inquires what quotation was made, and on being given the desired information remarks, "Why I did not know, Mr. Architect, that you were considering Seconds on such an important operation!"

Mr. Architect promptly informs Hen that no mention of Seconds was made by the other brick man, and he would not give Seconds any consideration whatever.

"Well," says Hen, "he can never deliver brick according to that sample at the price mentioned," and then graciously adds: "He might intend giving you a few thousand No. 1 brick to get you basement high, but after that, look out for the Seconds." Then Henry pulls the master stroke with this bright remark, "You know, Mr. Architect, there are tricks in all trades."

Mr. Architect's mind instantly reverts to a building that he had erected two years previously, where he experienced some trouble with brick that were delivered to the building after he had gotten story high, and he began to wonder if he had not been jobbed by the salesmen who sold him those brick. This, however, was not the case. The trouble had been that the brick man was called on to deliver brick before the car had arrived, and he started the operation with brick from his warehouse, with the result that, when the car came in, the brick it contained proved to be a slightly different shade from those served from the warehouse. But there was not an iota of deception used by the brick man.

Mr. Architect had always assumed that the brick business was an honest business, conducted by honest people, but Henry, with his little hammer, has set him figuring the chances that fellow Diogenes would take in trying to get by a crowd of brick salesmen without having his lantern swiped. Henry has not gained anything by his mischievous knocking, but the brick business in general has been accused of sharp practices, and Hen's competitor has to start all over again with Mr. Architect. He has to show him that the practice of submitting No. 1 brick and serving Seconds is not countenanced in the face brick business, but is severely condemned. He must impress on Mr. Arcihtect that had he intended serving Seconds on his operation he would sell them as such, subject to no rejections.

Speaking of rejections—it is a pretty safe bet that the candidacies of Alkali Pete, Old Doc Anvil, and Henry the Second, for membership in the Brick Knockers' Club, will suffer no such fate.

* * *

A Review of the Coal Situation

The coal situation continues to be one of shortage and uncertainty. While the government report of last week showed an increased production for the current year, this increase has been insufficient to take care of augmented industrial demands. Moreover, the significant feature of the production statistics is that the greatest gains were made prior to July 11. Since that date production has suffered many setbacks from strikes, such as the one that started in central Illinois recently and spread to southern Illinois and Indiana, and transportation difficulties. Labor, particularly in the East, is scarce and correspondingly less efficient. The public agitation culminating in the fuel control provisions of the Lever Act has further hampered output and has shaken the confidence of the mine owners in the stability of their enterprises.

Altho maximum prices as established by President Wilson and modified by Fuel Administrator Garfield have been in effect for several weeks, the quantity of coal purchasable at those figures has been negligible. The East, of course, was well contracted before these prices were announced and even Illinois and Indiana, where a large tonnage was being marketed without contract, is sold up on choice grades from 20 to 60 days in advance. The strikes before mentioned will place these two states still further behind on deliveries. While there has been a heavy movement of coal to the Northwest, that benefit is less real than appears upon the surface because the docks in that part of the country started the season far below normal.

COAL NOT CONTRACTED FOR, HARD TO GET

Reports from New York, Chicago, Pittsburgh, Buffalo, Cincinnati, Philadelphia, Boston, Baltimore, Columbus, Cleveland, Detroit, St. Paul, and Duluth last week were all of the same general tenor. Shippers were concentrating upon contract deliveries taken for the most part at prices considerably in excess of the new government maxima. Buyers not protected by contracts were experiencing great difficulties in obtaining adequate tonnages. Rumors of possible shut downs because of a lack of fuel were frequent. One large industry in a central western city, for example, closed the week with stock on hand to run it until Monday noon. The jobber, usually the resort of the buyer under such circumstances, finds his margins so restricted by federal order and tonnage so hard to get that there is little incentive for him to step into the breach.

The coal purchaser, in order to safeguard the operation of his business, must look at the fuel question from the standpoint of production, distribution and price. During the first eight months of 1917 bituminous coal production approximated 363,500,000 tons, an increase of 37,000,000 tons over the same period in 1916, but the peak production was in July; and the big, steady gains earlier in the year. Increased industrial demands have swallowed up the increase. Labor is short and restive, it demands and has been tentatively promised increased compensation which will be reflected in future prices. Optimism over the transportation system is not justifiable. Car shortages have been pulling down production. Winter weather will reduce railroad efficiency and government war demands upon the service will grow. The coal situation today is serious; its trend is dangerous and a crisis may occur at any time. Buyers should be guided accordingly.

* * *

A Remarkable English Munitions Village

American architects and building contractors have something to learn from the inconceivably rapid completion of Well Hall, a new suburb of London, lying in Kent, a mile south of Woolwich Arsenal, says "The L-C Bulletin," published by the Laclede-Christy Clay Products Co., St. Louis, Mo. Ground was broken seven months ago. Today a village of 1,300 substantial brick or stucco two-story cottages is complete in every detail, and every cottage occupied by munition workers from the Arsenal.

Twenty-five million brick were used, and 10,000 tons of cement. About 300,000 feet of drain or sewer pipe were laid. Eleven thousand tons of flint were employed in road surfacing and in mixing up the "rough cast" finish of a portion of the houses. An army of 7,000 workmen was engaged, and the work so organized and co-ordinated that there was practically no lost motion from the very incipiency of the enterprise.

The Well Hall plans have been duplicated for reconstructive work thruout northern France and Belgium, and no doubt our American engineers will learn much of instructive interest when the time comes for them to take up their allotted work in the shell-wrecked villages and cities between the Somme and the Scheldt.

* * *

Hints for Planning Tile Drains

Prof. J. T. Stewart, of the Minnesota Agricultural College, has enumerated a number of points to follow in planning for the construction of tile drainage systems, which the drain tile manufacturer might profitably pass on to his farmer friends. The following points suggested by him apply to conditions found in the South. The individual farmer should:

1. Select an area the tiling of which will drain the most land at the least expense.

2. Locate the low spots and water channels during the wet season of the year.

3. Examine thoroly the character of the ground, by digging holes along the lines of the proposed drains. Dig some of these holes when the ground is dry and others when the ground is full of water, and note the comparative ease of the work, the caving, the rapidity with which the holes fill with water, the presence of fine sand, gravel, etc.

4. Contract with a reliable tile factory for the delivery of the tile needed at prices f. o. b. the nearest railroad station to the work. Let the delivery be at a season when you are not busy with other work and when the roads are good. Tile can often be hauled advantageously during the season when crops are being hauled to town, the wagons returning from town loaded with tile instead of empty.

5. A few days before the engineer comes out to make the survey, run the mowing machine along the proposed trench lines; also have stakes cut and ready.

6. If there is no available man in your neighborhood competent and experienced in laying tile, try to get such a man from some other locality for a few weeks, until you can "learn the trade." If weeds have grown up again, remove them. Be careful not to break down the survey stakes or drive over them in unloading tile.

7. See that the tile is conveniently distributed, and broken pieces for batting joints scattered within easy reach, before the tile man begins work. If there are no pieces, the layer will break good tile to get them.

8. See that the upper end of each tile is securely closed against the entrance of silt or mud when leaving the work at night.

9. If practicable, before the trenches are filled, have the surveyor test the grade of the tile. This can be done after the tile are blinded by running an iron rod thru the blinding to the top of the tile, and holding the leveling rod on the top of the iron rod.

* * *

Japan Buys St. Louis Brick

Demands for brick and other clay products from Japan and orders placed here during a visit of the Japanese Mission to the United States, have changed the St. Louis brick sales and manufacturing situation considerably, according to local manufacturers and sales agents. A period of increased prosperity for the plants in this section is foreseen.

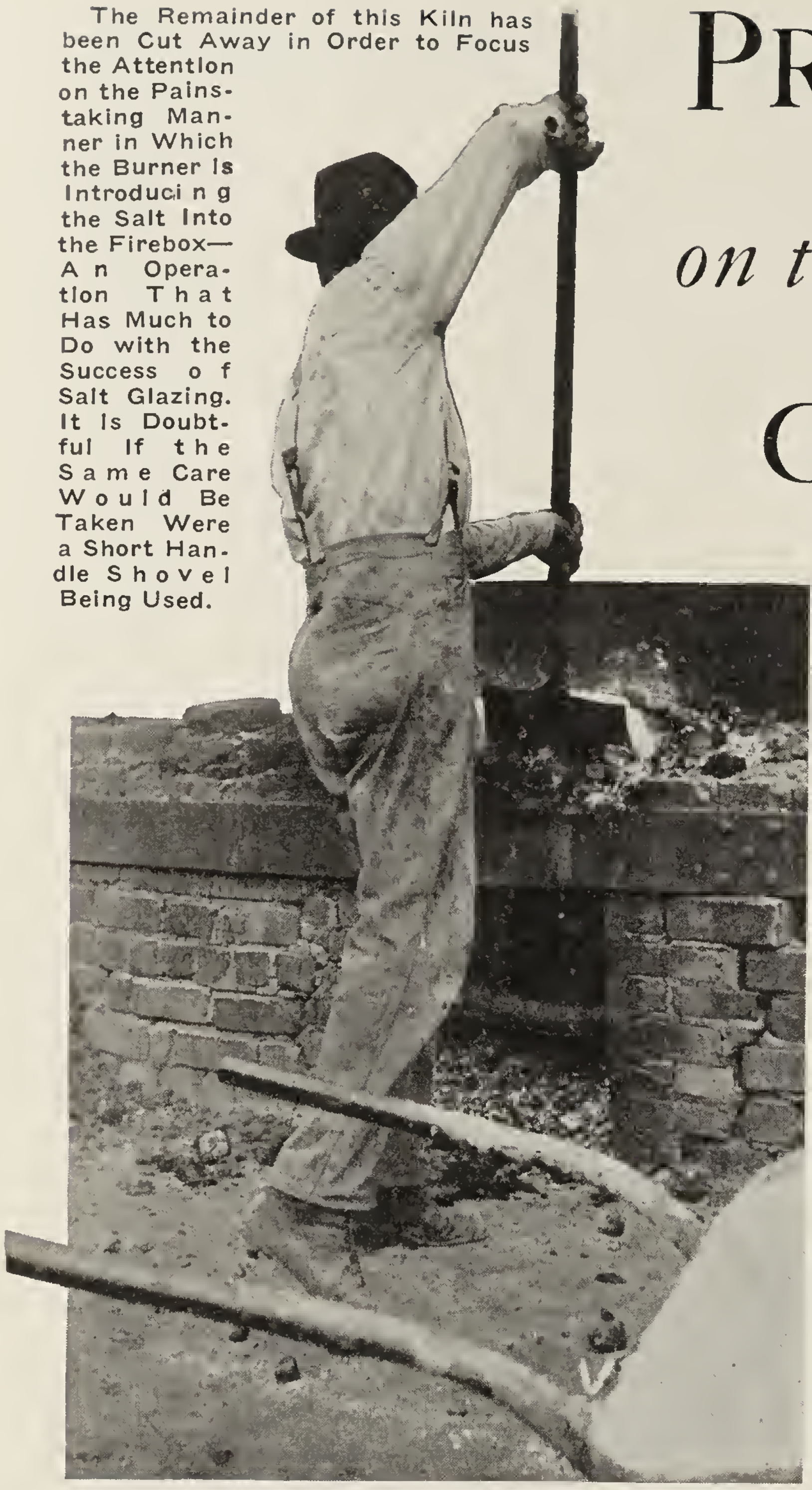
The Japanese Mission members found the plants well equipped to turn out just what they were commissioned to buy. According to T. Itto, member of the mission, there has been a strong demand in Japan of late for a good brick of the rough surface type and the American brick has made the hit with his countrymen. He scoffed at "Yellow Peril" talk and declared that practically all the purchases of clay materials for his country will be made in the United States, asserting that there has not been any feeling of secret hate for America in the Mikado's country, but that there exists a feeling of friendship for the "Country of Independence."

While the initial orders placed thru the mission are not in any great amount, it is believed that they are but the forerunners of larger orders to follow; and manufacturers here will be ready to supply a constant and growing foreign demand if they can make adequate shipping arrangements.

* * *

Louisville Commons Go to $12 at Job

An advance of 50 cents a thousand on common brick was announced by the Louisville trade shortly before the first of November. This makes the price $12 on brick delivered on the job and $10.50 on cars. It is stated that there would be a similar advance on the prices of hollow tile except for the fact that little of it is moving. The advance on brick is a direct result of the advance in the price of coal.



The Remainder of this Kiln has been Cut Away in Order to Focus the Attention on the Painstaking Manner in Which the Burner Is Introducing the Salt Into the Firebox—An Operation That Has Much to Do with the Success of Salt Glazing. It Is Doubtful If the Same Care Would Be Taken Were a Short Handle Shovel Being Used.

PRACTICAL HINTS *on the* BURNING *of* SALT GLAZED VITRIFIED HOLLOW WARE

While This Article Deals Chiefly with the Subject of Salt Glazing, Explaining in Detail the Causes for Roughness and Cracked Pipe and Pointing Out the Remedies for These Troubles, It Also Covers the General Subject of Burning in a Very Constructive and Lucid Manner. It Is Made the More Valuable Because Its Contents Are Based on Actual Experiments Made on a Large Sewer Pipe Plant.

By S. C. Karzen

Plant Superintendent, American Sewer Pipe Co., Uhrichsville, Ohio. This Article Is Reprinted From the "Transactions of the American Ceramic Society"

DEFECTS IN SEWER PIPE are quite numerous, and appear at the most unexpected times, but all the troubles can be traced back to some definite cause, and if each of these causes be eliminated, most assuredly the troubles will disappear.

The most common trouble encountered in burning is the so-called blowing or scaling. This is done during the *water-smoking* period and, as we are all aware, by lengthening the period this defect may be eliminated. Altho this knowledge is quite common among clayworkers, it is really surprising how few of them know how to proceed when the trouble shows up.

It is principally for the unknowing ones that the following chart has been drawn up. It is self-explanatory, and can be used with any type of clay, and I am quite sure that if a little judgment is used along with the chart, good results may be obtained.

As may be noted in Table I, the burning period is divided into days, the length of the period depending on the size of the largest ware set. Ware manufactured of shale ordinarily takes longer periods of burning, due to excessive amount of carbon present. Fire clay ware requires shorter periods as noted. A series of cut and try methods must be used to determine the conditions of different plants. For example, we set a kiln of 18 in. D. S. (double strength) pipe and mark the burn nine days as per Table I. The burning method as outlined on the chart for a nine-day kiln is then followed. We find that the ware is all right when drawn. The next kiln of ware (18 in. D. S.) we set, we mark up eight days and follow the schedule for an eight-day kiln. When the kiln is drawn the ware is noted, and this method is followed until we see that if we cut the time any further trouble will result; and at this point it is wise to stop.

Using this method of burning, it is really seen that a close tab can be kept on ignorant burners. Also placing burners on a time schedule for the preliminary heating up brings the kilns off on time. Relative to the amount noted per firing, this was based on Pittsburgh and Ohio coals. The amounts should be slightly increased for western coals which are of a lower calorific value. Following the chart, with a little experimenting, it is a simple matter to eliminate blowing and scaling with the least possible increase in burning time. One thing must be noted, however, in this regard, and that is, that ware set green is a fertile cause for blowing, and that in all cases where this is found necessary an extra day or perhaps more should be allowed in burning.

FIRE CRACKING

This is a defect quite prevalent in the sewer-pipe industries, and a large percentage of loss can be attributed to it. There are several reasons for fire cracking, any one of which may cause a considerable amount of loss. If the pipe are set green, the chances are that a number of them will be fire cracked when drawn, especially if the clay happens to be short naturally. Hence, in a case of this kind, it is necessary that ware be bone dry when set.

Another common cause is in the setting. Large pipes are set four high or eight feet in all. In setting it is necessary that the upper pipe be perfectly centered in the pipe beneath. Failure to do so means unequal distribution of the weight of the pipe on the socket of the pipe beneath, which results in a cracked pipe. Too much emphasis cannot be placed on the care to be used in setting ware.

The third cause, and the one least understood, is that due to too rapid heat raising, caused by too heavy firing at any one period, and too long periods between fires. This causes the ware to heat up rapidly during the combustion of the fuel, and expand at the same time. The period between the fires causes cooling in the ware, consequent contraction, and eventual cracking. The most sensitive point is, as a rule, the socket, and this is where the most cracking occurs.

In order to eliminate losses of this kind, it is first necessary to avoid too heavy firing. The cleaning of the fires is the period of greatest danger. Instead of cleaning every fire hole around the kiln, every other hole should be cleaned, thus permitting half the holes to admit cooling oxygen during the clean. Also, short firing periods should be observed during the heat raising, and light fires used. This will effect a saving of fuel, as well as reducing the fire cracking, but it will of course mean extra labor in firing. At one plant where it was almost impossible to burn large ware without excessive loss, the mere shortening of the firing period and the reduction of the amount used to a firing, almost eliminated this trouble.

SWELLING

So much has been written on this subject and so fully has it been discussed, that I think it unnecessary to devote much space to it. Suffice to say that this trouble is directly due to improper oxidation of the carbon contents of the clay. Very little swelling is ever incurred in the fire clay districts, not because carbon is lacking in the clay, but because it is in smaller percentages, and in a form much more easily oxidized. Many fire-clay pipes show red centers which means too rapid oxidation, but swelling seldom occurs. Shale wares, however, show rapid oxidation by swelling, caused by the effort of the CO_2 to escape from the ware after partial vitrification has set in.

The one remedy is the use of large trials, which method has been amply described in numerous articles.

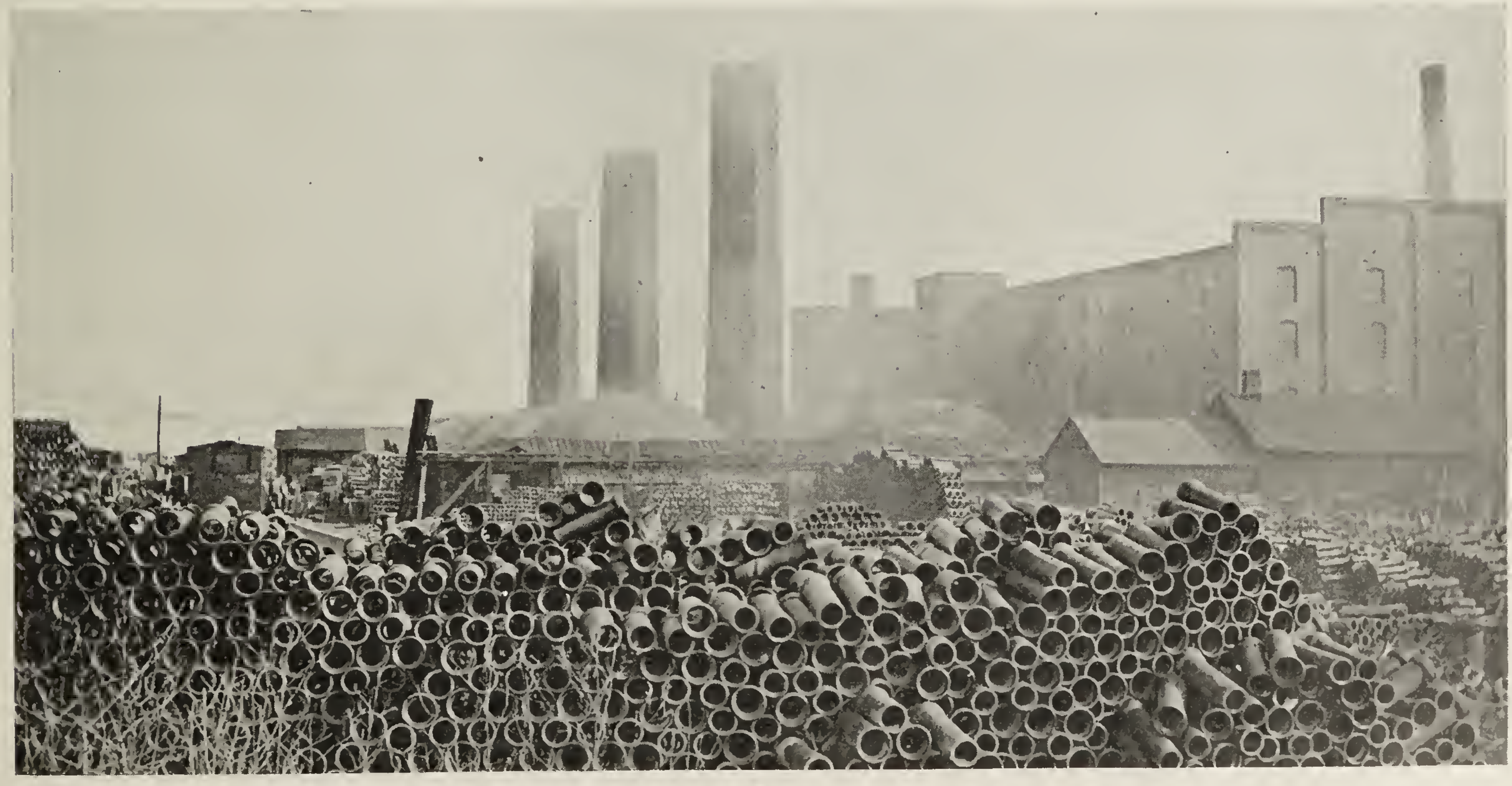
SCUMMING, ROUGHNESS, AND CRAZING

This is another defect which has been amply discussed. It may be due either to the presence of soluble salts in the clay or to those introduced with the tempering water in the preparation of the clay. This latter item is often overlooked. I know of a case in which soluble salts were introduced with the water used for tempering. The pipe showed up badly, scummed, and poorly glazed, even with use of excess barium carbonate. After the source of water was changed, the pipes were completely different in appearance. If change of water does not benefit, the only other recourse is to the use of a compound of barium.

There are a number of defects which show up in the last stages of the burning and these will be discussed under one heading because the defects are all attributable to one cause.

Roughness is a defect common to vitrified ware in general. Much has been written on this subject and numerous theories have been advanced, but roughness is just as common as it ever was. There are several varieties of roughness, or rather several causes to which roughness may be attributed, the first and last known is called iron spots. This is thought to be primarily caused by reducing action in the kiln, and will be discussed more fully later.

The second variety of roughness is due to the presence of carbon, generally in the form of a high carbon shale which does not become intimately mixed with the other clay in grinding. These particles remain in the surface of the ware and burn out eventually, leaving a cinder and very often a pitted surface. This is especially true in certain districts in Michigan, where a mixture of highly carboniferous shale and fire clay are used. The shale is so high in carbon that



Kind of Ware	Length of Burn in Days		Burn days	First Day	Second Day	Third Day	Fourth Day	Fifth Day	Sixth Day	Seventh Day	Eighth Day	Ninth Day	Tenth Day	Eleventh Day	Twelfth Day
	shale	fire clay		shovels	shovels	shovels	shovels	shovels	shovels	shovels	shovels	shovels	shovels	shovels	shovels
8 in., 10 in., 12 in., dia.	5	4	4	2	2½	Kiln cleaned, heat raised	Finished	*	*	......	......	......	......	......	......
15 in S. S.	6	5	5	1½	2	2½	Fires cleaned, heat raised	Finish	......	......	......	......	......	......	......
15 in. S. S.	7	5	6	1	1½	2	2½	Fires cleaned, heat raised	Finish	......	......	......	......	......	......
18 in. S. S.	8	5	7	1	1	1½	2	2½	Clean fires, raise heat	Finish	......	......	......	......	......
18 in. D. S.	9	6	8	½	1	1	1½	2	2½	Raise heat, clean fires	Finish	......	......	......	......
20 in. S. S.	9	6	9	½	1½	1	1	1½	2	2½	Clean fires, raise heat	Finish	......	......	......
20 in. D. S.	10	7	10	½ shovel† every other box	½ all around	½	1	1	1½	2	2½	Clean fires, raise heat	Finish	......	......
22 in. S. S.	9	6	11	½ shovel every other box	½ shovel every other box	½ shovel, all boxes burning	½	1	1	1½	2	2½	Clean fires, raise heat	Finish	......
22 in. D. S.	10	7	12	½ shovel every other box	½ shovel every other box	½ shovel, all boxes burning	½	½	1	1	1½	2	2½	Clean fires, raise heat	Finish

*Note—Coal fired whenever necessary after fires are cleaned.
†Note—Where marked ½ shovel every other fire, it means only ½ kiln is lighted.
[S. S. in first column means single strength; D. S., double strength.]

it burns out in spots, making a very rough looking pipe. In this particular case, the high carbon shale was eliminated from the mixture, and the roughness disappeared to a large extent.

REDUCTION DURING SALTING AND ITS EFFECTS

In the fire-clay districts, where the clay naturally burns to a light buff color, it is the common custom to thoroly smoke or reduce the surface of the ware in order to obtain the dark color demanded by the trade. In shale ware this is not necessary, as the material burns to a red color naturally. Moreover, reduction in shale gives the ware a highly metallic luster and black color which is very desirable. But as I have said before, fire clay is being smoked to a large extent for the color. The result of this action is far-reaching on the quality of the ware, and has given rise to a number of defects which in many cases make the ware almost unmarketable.

The first consequence of this custom is the fuel waste. In order to ensure reducing conditions, the burners lower the dampers, close the fires up tight, and fire at long intervals. This keeps the kiln full of smoke, which may be observed pouring from the stack at any time. This is naturally a very wasteful procedure from a fuel standpoint as the biggest percentage of the fuel added is being lost at the stack.

The second result I wish to call attention to, is not noticed until after the pipe have been exposed to the weather for awhile. After the atmospheric conditions have worked their will on the stock pile for a few months, these pipe commence to craze, showing faint hair-like cracks all over the surface of the ware. This is never found in a pipe unless the surface has been subjected to severe reducing conditions. The action involved is probably a weakening of the body by the change of the iron from the "ferric" to the "ferrous" stage.

The third and by far the most important effect is the resulting roughness. Roughness is prevalent to a large extent in the fire clay districts, and to a less extent in the shale district. The roughness I am now referring to is that most commonly called ironing or iron spots. In spite of the fact that fire clay is supposedly not subject to reduction, roughness is quite common.

IRON SPOTS CAUSED DURING SALTING

The usual explanation for ironing is based on the assumption that the reducing action of the gases of combustion brings these to the surface. In order to get at the truth of the matter, and determine just when this roughness occurs, a few simple experiments were made. Ware was set in different parts of a kiln in such a fashion that no glaze could penetrate. Also ware was set which was continually bathed by the salt fumes. When the ware was drawn it was found that the unglazed material was perfectly smooth and the glazed ware was quite rough. It was decided from this that roughness did not show up until the salting period.

In order to verify this, an entire kiln of ware was heated up until ready to be salted and finished, and then allowed to cool without any salt being added. On opening the kiln, it was found that the ware was free from any iron spots. This same kiln was then closed again and rapidly fired and salted. When drawn, the ware was just as rough as usual. *It left no reasonable doubt but that the iron spots are brought to the surface during the salting of the ware and not before.* Hence, we can reduce or oxidize as much as we please previous to this period, but during salting, oxidizing conditions must be obtained.

COLOR WITHOUT REDUCTION

Since the trade demands colored ware, it behooves us to obtain it in the fire-clay districts. However, as I have just pointed out, reduction must be avoided as much as possible, especially during salting.

In this respect I wish to state that I have obtained splendid coloring without the aid of excessive smoking. During the heat raising period it is often quite a problem to keep conditions oxidizing, due to extremely heavy firing. Hence, it is quite easy to obtain a thin coat of smoke in the ware at a single firing. This in turn can be easily drawn out again by opening of the fires for a short period. Then another skin of smoke can be allowed to penetrate the ware. This is again burned out by opening the fires. This is commonly called flashing in the fire-clay face-brick districts, and is their usual method for obtaining flashed shades. The alternate reducing and oxidizing leaves the iron on the surface in a reddish color. Now, when the salt is applied, bright oxidizing fires may be used, and the cherry red coloration will be obtained.

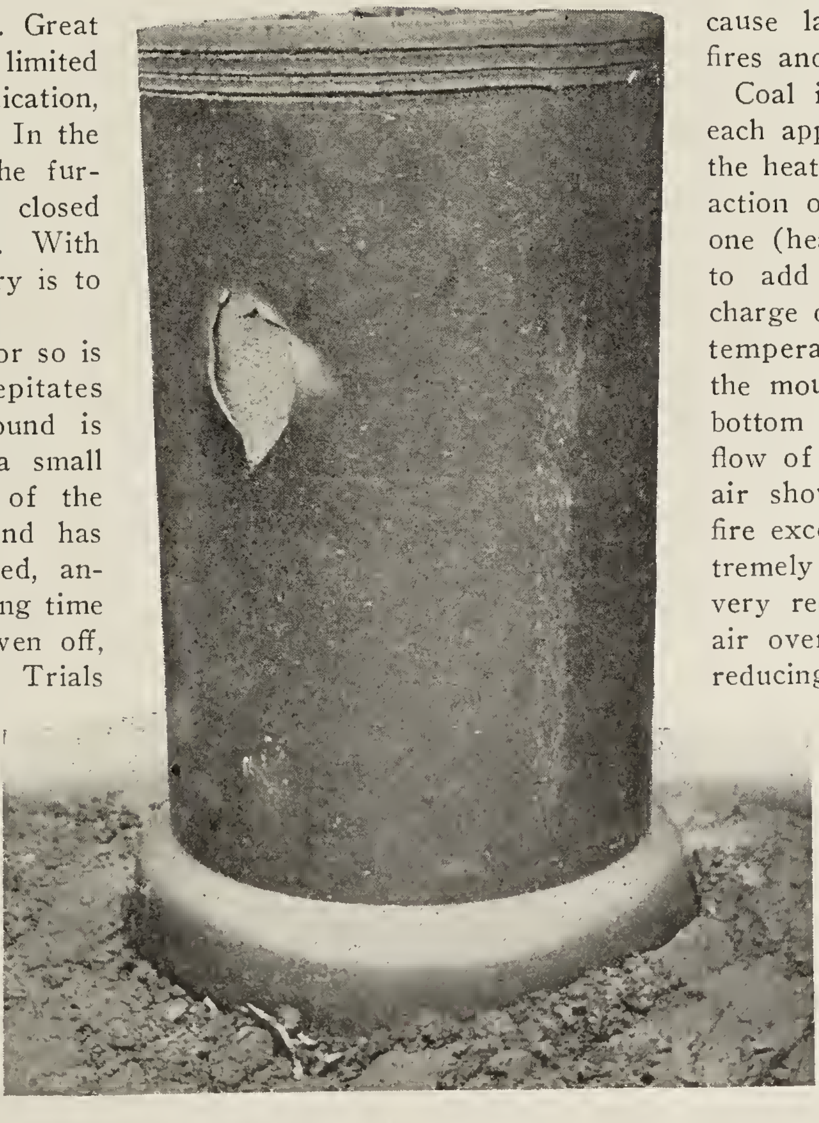
SALTING

I have stated that much of the roughness encountered in burning is due to reducing conditions set up during salting. The following scheme of salting was used with the primary object of creating oxidizing conditions. I have since found that an exceptional glaze can be obtained in many cases where glazing was difficult before.

To begin with, the ware must be burned fairly hard before salting is considered. After the trials show up considerably hard, the kiln fires must be prepared for salting as follows: The fire holes must be thoroly cleaned, the wisest plan being to clean alternate fire holes and thus eliminate excessive amounts of green fuel and the resulting heavy smoke. After the fires are clean, a light salt fire is placed close to the mouth of the fire hole, and a small air space is allowed over the top of the fire. This is in the case of dead bottom furnaces, but where horizontal bars are used it is best to leave the door open just a trifle. This may not be the most economical way of firing, but it ensures a sufficient supply of oxygen, which is what is desired.

The fire is allowed to burn until the green coal is aflame and the volatile matter is expelled. This ordinarily requires about 15 to 20 minutes with long, flamed coals, and a little less with short-flamed coals. At this stage the fires are at their greatest intensity. The salt is now applied, a small scoop should be used, and a small amount of salt spread evenly over the fire. Great care must be used that only a limited amount of salt be used to an application, for reasons which I will discuss. In the case of dead bottom fire holes the furnace hole should be immediately closed up with a small scoopful of coal. With straight grates all that is necessary is to close the door.

A period of about ten minutes or so is now allowed until the salt decrepitates completely and then another round is applied as stated, followed by a small amount of coal or the closing of the fire door. When the third round has been applied, and the salt burned, another light fire is put on. Allowing time for the volatile matter to be driven off, three more rounds are applied. Trials can be drawn every three rounds to determine the progress of the glazing period. The fires should be shaken or given a light cleaning after every three applications. Six rounds administered in this fashion, should be sufficient to develop a good glaze in most cases. Clays difficult to glaze may require three additional rounds applied after the method already outlined.



A Bad Case of Blowing

Considering the operation outlined step by step, we find that first the trial must be reasonably hard. This is well understood by most burners; but in the use of haphazard methods of salting, kilns are very often overburned, due to the burner waiting too long before starting the salt application. Using the method as outlined it is possible to start earlier in the game, before vitrification has even started. As the salting progresses, the ware continues to harden, since the salt fumes have a fluxing action. By drawing trials after every three rounds, it is possible to keep complete control of the salting; and when the trials finally show hard enough and glazed enough, salting may be discontinued. By thus starting the salting early, and hardening the ware gradually during the salting, it is possible to lessen the chances for over-burned kilns.

CLEANING OF FIRES AND APPLYING SALT

Most practical burners clean fires as a preliminary measure to the salting process, but they never go beyond that, and consequently lose the benefit of the preliminary work. By cleaning the fires before salting, we bring them to a high heat, and by keeping the fires bright and unclogged, we permit free oxygen to enter, thus furnishing good combustion conditions and making the kiln atmosphere oxidizing. The fires must be stirred up and keep bright continuously in order to ensure these conditions.

As stated, 15 minutes must pass before salt is applied. This gives the fires an opportunity to attain their maximum temperature. Also the volatile matter of the coal has, to a large extent, been expelled and conditions in the kiln have become more oxidizing. Furthermore, on the application of each fire, there is always a slight scum of smoke on the surface of the ware, which gathered while the volatile matter bathes the ware. This burns off immediately after the volatile matter is expelled, and the oxygen has a chance to get in its work. If the salt is applied before this scum is burned off, a rough product is ordinarily obtained, and in shale districts, a metallic black color results. The salt is applied in small amounts and is well spread, because larger amounts will deaden the fires and remain unburned.

Coal is added in small amounts after each application of salt in order to keep the heat in the kiln to a maximum. The action of salt glazing is an endothermic one (heat absorbing), and it is necessary to add a little fresh fuel with each charge of salt in order to keep the kiln temperature uniform. A little fuel closes the mouth of the fire hole, where dead bottom grates are used, and cuts off the flow of the cold air over the fire. Cold air should never be admitted over the fire except in cases where a kiln has extremely poor draft and conditions are very reducing. The admission of cold air over the fire bed has the effect of reducing its temperature, and thus cutting down its efficiency so far as decrepitating the salt is concerned. For best results all air must be admitted thru the fuel bed, and not over it.

The application of three rounds is not arbitrary. I have found by experiment, that three small rounds applied as stated is about as much as an ordinary salt fire can take care of efficiently. By the time a fourth round is to be applied, the fires have lost their brilliancy. On the other hand, if only two rounds are used, we do not get the most out of our fuel, and there is always an opportunity of overburned ware due to the use of fuel to excess. After the third round has been applied, a small salt fire is used, which brings the fuel bed back to its original heat intensity.

Cleaning and stirring of the fires continually is necessary during the operation. It will be noted in this regard, that the salt to a certain extent melts and combines with the mineral matter of the coal ash to form a soft glassy slag, which runs down thru the fuel bed or grates, as the case may be, hardens as soon as the cool air strikes it, and prevents the air from entering. Hence it is of vital importance that the bed be shaken enough to break up this formation.

If the above method be followed and care taken, roughness can to a large extent be eliminated, and moreover an exceptionally bright salt glaze can be developed. Complete control of the glazing is possible at all times, and by the three round periods it is possible to salt until a good glaze is obtained.

As already stated, good color in the fire-clay districts can be obtained without the excessive smoking, but the preliminary flash must be administered first.

Before leaving this subject I wish to state that at all times it is necessary to have a good draft during this operation. If a damper is used, it should be raised pretty well, thus taking the fumes rapidly thru the kiln, and ensuring maximum oxidizing conditions.

SALT SCUMMING

It happens quite often that after a kiln is finished, and the ware drawn, that a white scum shows on the ware after it has been in the open a short time. This is due to excess salt fumes in the kiln atmosphere, which had not been drawn off at the stack, but were redeposited on the ware. As a matter of course, the first heavy rain will remove this from the surface of the ware; but to the uninitiated, this often appears a serious defect, and may result in loss of business. In order to eliminate this scum, a light fire should be applied after the salting has been completed, and most of the salt has decrepitated. At the same time the stack damper should be raised high. The added fire will have a tendency to burn up what salt may remain in the fire holes, while the increased draft will draw the fumes from the kiln. The small fire will not affect the ware, if it is not applied until the kiln has evidently started cooling. Scumming of this nature can be eliminated completely by following this simple procedure.

* * *

To SPEED SHIPMENTS *for* BUILDING

OVERTURES will be made in Washington by building material manufacturers to help the government in the matter of facilitating war shipments and at the same time to discuss ways and means of getting important building material shipments thru to the Atlantic seaboard in order to help win the war by speedily solving the housing problem, which is approaching an acute stage, says The Dow Service Daily Building Reports of New York.

It has developed that there is a way to remove practically the last obstacle to a general building movement by helping the railroads to solve their problem of congestion by loading cars to capacity, and by routing shipments eastward over lines following more circuitous rails. With the purpose of laying before the proper authorities their plans for helping to speedily win the war, along with other lines that have been called in conference on the subject, definite steps will be taken almost immediately by the leading building material interests of the country.

Directly involved in the overtures will be the order of the priority board prohibiting furnishing of open cars for material to build or repair highways and general construction. Among those who are interested in the matter are the brick, sand, stone, motor truck, highway and street officials, building material manufacturers, distributors and others.

HIGHWAY DEVELOPMENT ESSENTIAL

Two factors concern themselves with the pilgrimage. One is that at times when the railroads are congested, which probably will continue during the tenure of the war, highway development is the one solution for the manufacturer and distributor of all sorts of materials and supplies. By motor truck steel can be sent to New York from Bethlehem, terra cotta from New Jersey, brick from southern New York, wire from Trenton, lime and plaster from Connecticut, and Portland and natural cement from the Lehigh and Hudson districts. The other factor concerns the matter of promptly meeting the very serious housing situation for factory workers and commercial houses.

Economic conditions in this vicinity especially are making the tenement house more desirable as a solution of the housing problem than the erection of myriads of small four to six-room homes that the average worker cannot maintain without taking in boarders. The elasticity of the modern tenement permits the tenants to rent suites in accordance with their financial ability to maintain them, and they have no grounds to keep up nor heat to be looked after during the day. If tenements are demanded as a result of the demand for adequate housing for their employes by munition manufacturers, adequate quantities of structural steel and equipment must be made available as soon as possible. These tenements, it is said, can be erected at a great saving over the wholesale individual house plan, and conditions are rapidly ripening that will force action if the vast floating population of workers now in this vicinity is to be retained by the employers.

In the meantime, as metal prices recede. other materials are being forced to higher price levels. If railroad freight rate increases are allowed, litherage advances become effective on December 1, cotton and wood containers move up, and coastwise shipping is not speedily increased, basic material prices will be very much higher. In fact the trend is already shown in the current week's price movement.

The New York Lumber Trade Journal's official wholesale price list shows some advances as of November. Red cedar 6 inch is now quoted at $31.50, representing a dollar advance; which is also true of the "a" classification in the same wood. Ash is up $6 and $3 on 4/4 inch first and seconds; basswood 4/4 inch first and seconds, is up $3; beech has advanced $8 and $10 on 4/4 inch first and seconds. Birch has advanced $3; red gum is up $8 and red gum quartered, $2.

In a few lines prices have fallen off. No. 1 common flat, long leaf yellow pine is now quoted at $38, a drop of $2. Cedar shingles have also dropped back slightly. Bar lead shows another drop this week of a cent to a cent and a half. Pig lead also is off one-half a cent to a cent and a half. Mexican paving asphaltum, however, which has been fairly steady at $21 in wood barrels has gone to $25 and to contractors in tank cars the price now is $19 instead of $18. Common brick, Portland cement, lime plaster, and all calcined materials are fairly steady on present price levels, altho manufacturers are operating on very narrow margins.

NATIONAL FIREPROOFING CO. REVISES PRICE LIST

Illustrative of the general disposition on the part of building material manufacturers to adjust their prices as far as possible to the advantage of those who can go ahead with new building operations now the National Fireproofing Co. is at present making general readjustments of their prices. Some of the items will show a very slight increase, more will remain where they are and a few will show a slight decrease from present quotations. These new prices will be officially announced before the middle of the month.

The Dow Service Daily Building Reports advises the contractors, prospective builders, and architects that help for the railroads will soon be forthcoming in the form of permission to increase their freight rates. It is probable that relief will materialize before the first of December, it says, adding:

Building material prices will not reflect the freight rate increase to an appreciable degree. In other words, no matter what increase is made, it will have no bearing whatever on an owner's decision to proceed or retard contemplated construction, here or anywhere else in the country. But it will have the effect of strengthening the price levels, and, in view of the meager profits being taken by building material manufacturers today as long as building is held back the prices will continue to hold firm or go higher. Should building proceed, the new freight rate increase and all the rest of the overhead now carried by the few building material orders that come thru, will be distributed over a larger volume of business and prices will come down.

Liberty Bonds and Building

While fear has been expressed that the general diversion of a large amount of money available for investment into Liberty bonds would cause a stagnation in building and real estate circles, such has not been the case. It is true that building is somewhat slow in comparison with previous years, but not any more so than might be expected under the unprecedented war circumstances. Building of certain kinds of structures is slow to a large degree, but on the other hand the building trades and real estate markets are generally in a healthy condition and better conditions are looked for in the spring.

Temporary diversion of money into government bonds might have a bad effect on building operations, but a permanent result is not expected. Instead of taking money from normal business channels, much of the money invested in Liberty bonds has been from hoardings, which have not been used to any great extent in actual business. Then again, Liberty bonds are as liquid and negotiable as currency and it is believed that many will be sold and the money used for buying real estate and investment buildings. Lands and houses can be bought with Liberty bonds as well as actual currency or bank credits.

Big Attendance At Permanent Buildings Meet

The regular meeting of the Permanent Buildings Society was held at Ft. Dodge, Iowa, on November 1 and was one of the best attended that that organization has yet held. The organization of the Western Drain Tile Association as a subsidiary of the Permanent Buildings Society has increased interest in the parent organization, which promises much for its future growth.

Probably the most important subject discussed was methods by which the present car shortage may be relieved. The situation has become very serious, especially in the Mason City district which is the center of the clay products industry in Iowa. In the Mason City plants the yards are now jammed to overflowing, due to a lack of cars with which to move the material. A committee from the Permanent Buildings Society will confer with government officials on the matter of having cars for clay products put on the priority list, inasmuch as these products have a very material affect on the production of food in Iowa.

The coal shortage is another critical problem with Iowa clay producers. Not in years has the fuel situation been so serious; and there is little relief in sight at the present time.

California Brickmaker on Extensive Trip

C. G. Berg, of the Port Costa Brick Works, San Francisco, Cal., was a recent visitor in Chicago on his way East. He stopped in at the office of the Wisconsin Lime & Cement Co., to see William H. Gifford, manager of the brick department, and while there was cornered by a representative of *Brick and Clay Record*.

His statement of conditions in the industry on the Pacific Coast was very interesting, to say the least. The fuel situation is acute at the present time, the price of oil having almost gone out of sight. Clay products manufacturers are turning to coal and a case was cited where $7.80 per ton was being paid for screenings from Utah. A freight rate of more than $5 is responsible for this high price, altho quotations at the mine have advanced from seventy-eight cents to $2.50 during the past few years. According to Mr. Berg, who is making the eastern trip to examine new equipment, it is possible to burn 8,000 brick with a ton of this coal.

We Have Moved

from 445 Plymouth Court to larger and more commodious offices at 610 Federal Street. In addressing your mail do not forget to send it to

Brick and Clay Record 610 Federal St.
Chicago

A FIRESIDE ARGUMENT

In the Course of Which Barnes Shows that it is Often Best to Let a Sleeping Dog Lie; Freight Rates Have a Way of Changing in the Wrong Direction at Times, the Action Being for the Higher to Pull the Lower One Up, Rather than the Other Way Round.

By G. W. Greenwood, M. A. (Oxon)
Secretary, United Fire Brick Company, Uniontown, Pa.

AS BARNES and the General Manager started from the dining room of the Brixton Inn, whom should they see but Baldwin, the sales manager, his long arms stretched out on the little table before him, and gazing moodily at a finger bowl.

"Look who's here," exclaimed Barnes, giving him a good natured poke.

"Sorry we did not see you come in, Mr. Baldwin," greeted the G. M. "It is not often you are caught away from home at lunch time when you are in the city. Is that why you are so melancholy, or are you getting more orders than we can handle?"

"Trouble enough," assented Baldwin, rising to join them. "You know that close fisted contracting concern Blank represents?"

"I recall meeting Blank once upon a time. He first bumped into me when he was going to have you carpeted for not making their collections for them. Is he wanting you to pull more of his chestnuts out of the glass tank?"

"Look Who's Here," Exclaimed Barnes, Giving Him a Good Natured Poke.

"Worse than that," growled Baldwin, leading the way from the dining room and bending over as he passed thru the doorway. Barnes smiled as he noticed the habit, resulting from many encounters with obstacles too low for his stature.

Stepping into the lobby, they found a freshly lighted wood fire blazing and cracking on the old andirons, and several comfortable lounging chairs placed invitingly before it.

Outside, the brilliant, many colored autumn leaves clung to the wet pavement where they had fallen, and passing pedestrians buttoned their coats a little more closely as they hurried on, leaning forward or backward against the wind.

"This isn't half bad," said the G. M., rubbing his hands in the blaze. "Let's camp here while Mr. Baldwin gets a chance to thaw out. What is our friend Blank up to now?"

BALDWIN'S COMPLAINT

"Well," said Baldwin, dropping into a large arm chair, "some months ago we had a settlement with them, and after allowing them everything they were entitled to, and more too, there was a balance of twenty-five dollars in our favor. Blank finally stated that they would send their check to cover the account, after vainly trying to invent some counter claim. But they didn't send the check. They would have surprised me if they had, but, as the amount was small, we did not press them for payment. Then we sold them that bunch of silica for the glass tank they were putting up and just before lunch in came their check, paying only for this last shipment, but marked 'in full of account to date.' They think in this way they will beat us out of the twenty-five dollars after all," kicking the burning sticks with one long pedal extremity and sending a shower of sparks up the back log.

"I'd send it right back," said the G. M., standing with his back to the fire and drawing himself up to his full height.

"Just what would tickle them most. They would keep the check for a month, have the use of the money in the meantime, and stave us off with a series of letters wanting to reopen the old settlement on which the balance of twenty-five dollars is based."

"But even if we should use the check," suggested Barnes, leaning forward in his chair and resting his elbows on his knees, "the fact that it is marked 'in full' does not constitute a legal defense if one can show that it was not a full payment."

"Perhaps not, but it certainly would complicate matters to have a receipted check to combat. What makes me so hopping mad is that they are going to make us either lose the money or else go to more trouble than it is worth in order to collect it."

"I feel that way myself," said the G. M. sympathetically. "I'd rather lose a hundred fairly than to be beaten out of a dollar. How will this work? Send the check to the bank on which it is drawn and have it certified. Then place the twenty-five dollar item in the hands of a collection agency."

"I can't see for my part," said Barnes, "what the difference is between depositing the check and having it certified."

Baldwin began to look quite hopeful as the G. M. explained. "If we can't get the money, neither can they retain the use of it. When the collection agency presents our account, they will not be able to flash a receipted check. Just to guard against any claim that we had not given any warning, we could acknowledge the check and ask for an additional check for the old balance. Then when they show that they intend to ignore our request, we can act without further notice. They will be beaten at their own game."

Baldwin's face was by this time all wrinkled up with smiles. "Gee, that's going some. Wouldn't I like to be on hand when the collection attorney Danneman gets after them. People hate to see him coming around, and he positively glories in his reputation." His face was as bright and cheerful as the wood fire itself.

DIGESTING A RATE LUNCH

"How are the shipments going to that Maryland furnace from which we recently received a good sized order?" asked the G. M., standing with his hands thrust deeply into his pockets.

Baldwin's customary serious expression returned. "Slow, slow," he answered. "No cars."

"How is the other road fixed for cars? Would it not be possible to ship some on one road and some on the other, or does only one road have traffic arrangements with the delivering line?"

"Ask Barnes. He's the railroad rate shark. According to him we had better stick to the present road. Is that the way it stacks up?"

Barnes nodded as He Picked Up from Among the Sticks on the Hearth a Couple of Branches, One of Them Shaped Somewhat Like a Y.

Barnes nodded as he picked up from among the sticks on the hearth a couple of branches, one of them shaped somewhat like a Y. Laying them side by each, he explained, "Here is our plant at A. Here is the destination at B. This single stick represents the road we are now shipping over. This branch of the Y leads from the Lincoln field to the same destination. The road we are now using carries a lower rate from A to B than does the other road."

"In other words, Barnes feels that the Y road isn't the wise road," commented Baldwin, without relaxing his solemn mien.

"I believe I see," remarked the G. M., tilting back and forwards on his heels and toes. "You feel that if attention were called to the difference in rates between the two lines, the lower rate would go up instead of the higher going down. I am beginning to digest the rates we had for lunch."

"Do you mean to say that you stood for a whole meal with a running accompaniment from Barnes on the subject of rates!" exclaimed Baldwin in mock astonishment. "You surely have some constitution."

The G. M. smiled. "That reminds me of the series of short stories by the English writer Crabb, which were the delight of a former generation. A girl just from boarding school remarked to her parents at the breakfast table. 'For a pure intellectual repast, I prefer Crabb's Tales.' Her father, who had been putting up his hard earned cash for her schooling exclaimed, 'Gosh, what a diet. No wonder you're thin!' So in case I begin to lose weight you will know that I have begun consuming railroad tariffs as a substitute for desiccated wood as a breakfast food."

"You might lose physically, but you would be ahead financially by the change," contended Barnes. "Now in the case before us, or beneath us if you prefer literally to look at it that way, the present rate which we are using is too well established by basing points to be altered by a comparison with the other line, and I am not at all sure but that the Y road would grant the same rate if we were to ask them and assure them we would use it when it was published. But they would be under obligations to carry the same rate from the Lincoln field. It's all right to be altruistic, but before going after a rate one might just as well take notice when it is going to prove of more benefit to his competitors than to himself."

"Then it looks as tho we might as well stick to the road we are using in making the Maryland furnace shipments, or would you think it advisable to assist indirectly in opening this territory to the Lincoln field, Mr. Baldwin? You ought to settle the question from a selling standpoint."

"I guess we had better not disturb existing rates but get after cars instead," was Baldwin's decision.

Seating himself and stretching his feet out to the fire, the G. M. resumed. "Now here is something which has always puzzled me: The rate from the Cayley plant to North Hinksey is eighty cents a ton. The Bennett plant is no farther away than the Cayley. Why shouldn't the rate from the Bennett plant be the same as from the Cayley?"

Barnes reached down and picked up one of the sticks which he had been using for an illustration and answered, "Logically, there is no reason for any difference in these two rates. If we were to take the question up with the railroad, it is my guess that they would promptly make the rates the same in both cases. Unfortunately," he continued, reaching in his hip pocket for his knife, "there are two ways in which these rates can be equalized. They would promptly raise the Cayley rate to a dollar flat, and then we might be sorry we spoke."

"Then what does one do when there are inequalities in rates? Say nothing lest a worse fate befall him?"

WHERE SILENCE WOULD HAVE BEEN GOLDEN

"In the words of an old song, 'It depends, it depends, it depends on circumstances,'" quoted Barnes. "Our friend Brownlee shipped out two cars of brick a year or so ago to the same point. On the first he was charged $1.20 a ton, and on the second, $2. He kicked at the second rate and referred them to the bill covering the first car as evidence that the rate should be only $1.20."

"And then" encouraged the G. M. as Barnes began to peel the bark off the stick.

"Then they showed him that the correct rate was $2 and proceeded to collect from him the additional eighty cents a ton on the first car."

Having peeled the stick, he went on: "The only safe way to go after a rate which is thought too high is to select some other fellow's rate which is lower and use it as an argument. If it is a fair parallel case, the first move of the railroad company will be to raise the lower rate."

Baldwin and the G. M. nodded.

"Then the concern with the lower rate will put up as stiff an argument as possible showing that their rate should stand. If they succeed, and the cases are parallel, of course, they indirectly strengthen ours. If they fail, that is their loss, not ours. Now the Cayley rate to North Hinksey is the lowest in this region for the same haul. Hadn't we better let a sleeping dog lie?"

"I'd be in favor of chloroforming him before he wakes," declared Baldwin.

An attendant came in with an armful of wood, which he tossed on the fire, causing it to snap like a bunch of fire crackers.

"Why wouldn't it be a good thing," asked the G. M., running his fingers thru his flame colored hair, "to have an association traffic man who would handle such questions for the members?"

OBJECTIONS TO ASSOCIATION TRAFFIC MANAGER

"I'm afraid it would start something one couldn't easily stop," explained Barnes, smiling at Baldwin's hasty efforts to dislodge a spark which had alighted on his trousers and bid fair to perforate them. "If the traffic manager would use one member's rate as a lever, and it should in consequence be raised, what sort of feeling would that member have for the association? Some time ago a manufacturer in the Cumnor field put up the argument that he was entitled to the same rate into this territory as the Lincoln field. He succeeded in gaining his point. We put up a holler, saying that we were entitled to the same rate back into the Cumnor field as they had just succeeded in having established into our camp. And we also succeeded. No single representative could have secured both those reductions. In fact, the railroads would be afraid to concede him any reductions at all, lest he would use them to beat down other rates. They would regard him in the light of the camel which got its head into the Arab's tent."

By this time Barnes had demolished his stick, and as an attendant brushed the shavings into the fireplace, he took up his monolog again. "I recently saw a map prepared for a blue stone association. It was shaded, showing just how far from its quarry each member could ship on a dollar freight rate. The field of each was shown in a different color. Some had a small range, while others, who had traffic managers on the job, had extraordinarily long ranges."

"What did the members have to say about the map?" asked the G. M.

"They didn't say anything. They didn't get a chance to express themselves. They never saw it. The discrepancies were so great that there would have been created a condition of strife that would, perhaps, endanger the organization, were the members aware of these discrepancies. So it was suppressed by those who had prepared it."

"What would you suggest in the way of freight investigations? How should one keep track of rates?" inquired Baldwin, rising and reverting mentally to the account he was preparing to collect.

"Pick out a good, capable girl and put her next to the intricacies of freight tariffs," responded Barnes, also rising to depart. "Gee whiz," he added, looking at the sleeve of his coat in which was a good sized hole surrounded by a brown halo. "How on earth did that happen?"

"I think," explained Baldwin, "that it happened just about the time you were so tickled at my encounter with a live coal. Anyway I first noticed it and brushed it off you just a few minutes later."

* * *

Business Mortality in November

With the smallest number of failures for the period in over a decade, and the lightest indebtedness, with one exception, since 1909, the October insolvency record maintains the highly favorable features which have characterized the returns thruout this year, says "Dun's Review." Commercial defaults last month numbered 1,082 and involved $12,812,012 of liabilities, as against 963 reverses in the shorter month of September for $11,903,051. But while the October mortality somewhat exceeds that of September, the number is well below the 1,240 failures of October, last year, and is, in fact, less than in any year back to 1906. Moreover, the aggregate debts, tho larger than the $10,775,654 of October, 1916, are materially under those of any October in eight years, the 1909 total being $12,529,862.

USING HOT GASES *from* BURNING KILNS *to* DRY CLAY WARE

IN THE OCTOBER 9 ISSUE of *Brick and Clay Record* appeared an article describing the system by which William Baines, superintendent of the Hamilton (Ill.) Clay Manufacturing Co., utilized the waste heat from burning kilns to dry his brick and tile. Mr. Baines, by constructing new flues, was enabled to switch the flow of gases after the watersmoking period had been passed from the stack to the dryer thru the underground flues.

The experience of this company in the use of hot gases for drying tends to dispel the apprehension that ware dried by this method would emerge from the dryer heavily coated with soot and also that the action of the acid contents of the gases would corrode the equipment.

SYSTEM SUCCESSFUL ON OHIO PLANT

We are in receipt of another very interesting letter from a clay plant superintendent, describing in detail the method used by him in making use of the hot gases for drying his ware. The writer is Charles A. Smith, general superintendent of the Ohio State Brick & Stone Co., which recently purchased the plant of the New Lexington (Ohio) Clay Manufacturing Co., manufacturers of wire-cut-lug brick. This letter is as follows:

The writer having noticed articles in *Brick and Clay Record* in several instances in regard to using heat from burning kilns in conjunction with that from cooling kilns to dry clay ware submits a sketch showing what he has been doing along these lines in the past year.

I came to New Lexington in 1914, taking charge of the New Lexington Clay Manufacturing Co., a new corporation, having purchased the plant from the New Lexington Press Brick Co.

This new company put in the stiff mud system and after a short time, I found that I was not getting sufficient heat to dry thirty-two thousand brick per day, the capacity we were trying to make.

In the meantime I got busy trying to find a way to keep the heat regular and of sufficient quantity in the dryer, which is of standard pattern, but could not do so with waste heat alone, as the kilns were built on rather low ground and the tunnels were inclined to remain cold and damp, owing to the above condition.

I at first thought of an auxiliary furnace, but with the high cost of coal and the extra labor required to maintain same, I finally decided to abandon that idea.

In thinking over the proposition and worrying about lost capacity, I finally thought of connecting the underground kiln flues with the main heat ducts, which happened to be an easy matter, as all the kiln flues on this yard run from the stacks entirely thru the kilns, thereby making the connections in most instances very short.

NO TROUBLE FROM SOOT

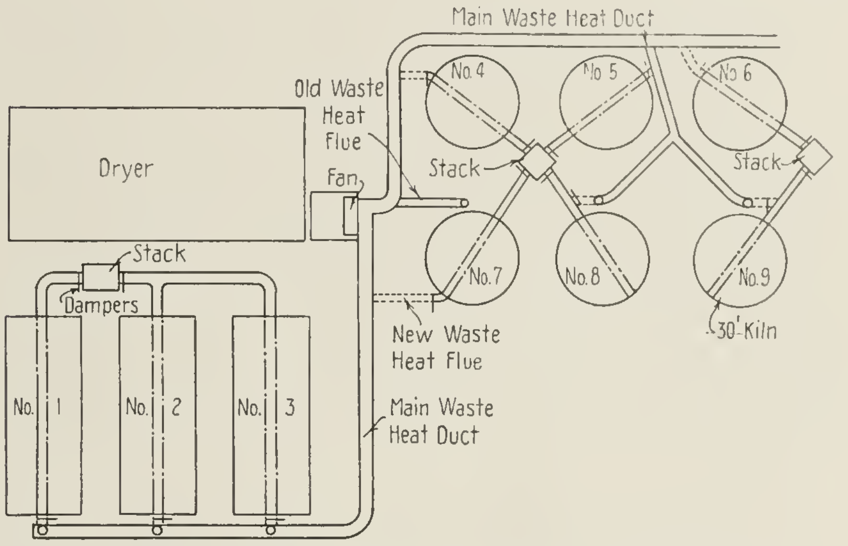
About a year ago I made this change, the dotted lines showing where the connections were made, and while I was afraid we would have black brick from the dryer, I was agreeably surprised to find that such was not the case and that the brick after being burned were of a clearer and brighter color than formerly.

In using this heat from the burning kilns I found that I reduced the burning time on the rectangular kilns from two to three days, but gained no time on the round kilns as I have excellent draft at that end of the yard.

I usually began to use this heat on second day after starting fires or as soon as the kilns began to show some red, about 1,000 to 1,200 degrees Fahrenheit, leaving the kilns connected to waste heat ducts until cold. I used the stacks only the first two days after starting fires.

I also found that I need not connect the kilns to the waste heat ducts with goose-necks as formerly, thereby eliminating that expense and labor.

In summing up the whole, I found that this work cost $90 to make connections and $25 for extra damper plates as each kiln now required one damper constantly, either at the stack end or at the waste heat end, and that I had solved the problem of getting dry brick with no added expense after installation.



The Dotted Lines in the Above Diagram Indicate the New Flues Which Have Been Built to Draw Off the Hot Gases During the Burning Period for Drying the Ware. Altho Not Shown Kilns No. 4, 5, and 6 Were Formerly Connected with the Main Waste Heat Duct by Means of Goosenecks.

The Ohio State Brick & Stone Co. will probably abandon the use of this heating system for the time being as it intends to manufacture a dry press fire brick which will go direct to the kilns from the machine, as it is doing at its Shawnee plant. If developments proceed according to the schedule, the new equipment will be installed, and the manufacture of this type of brick started by November 10.

This is the third instance of the use of hot gases from burning kilns in drying clay products that has been published and each one of the three cases have been standing testimonials to the practicability of the plan. Annually thousands of dollars of wasted fuel go up the brick plant smoke stack; here seems to be one method of utilizing some of that wasted heat and putting it to work earning dividends for the plant.

If you have tried the system and have found it to be impracticable for some reason or other, let us know about it—let the industry as a whole know about it so that it may profit from your experience as it has profited from the experience of those plants whose systems have already been described.

In the manufacture of clay products to be used in places where the ware is not open to view, the soot question is of no importance. To drain tile and sewer pipe and partition tile manufacture, for instance, a shade or two darker in the color or appearance of their ware is of little import, if the quality of the material is there. But the fact that this plan is in use on a face brick plant, where success is synonymous with the textures and colors produced in the burn, is a bit of startling evidence of the possibilities of catching those wasted dollars from the mouth of the smoke stack and using them to turn out a better product from the dryer, a product so dry that green ware in the kiln will be relegated to the scrap heap of the other problems which the march of progress has successfully solved on the clay products manufacturing plants.

Again we ask, "what is your experience and opinion of this system." We want to get the material from the man on the plant and in the executive office—from you.

* * *

Ceramic Registrations at U. of I. Drop

A bulletin issued by the Department of Engineering of the University of Illinois states that the registration in the department of ceramic engineering totals twenty-two students this year. This is a considerable reduction compared with last year's registration. The number of registrations in all departments for the coming year is almost twenty per cent. lower than the number of registrations made at the beginning of last year. In the ceramic department the drop in registration amounts to about fifty per cent.

* * *

John W. Sibley Speaks for Brick

Just a little piece of evidence that John W. Sibley, secretary and treasurer of the Southern Paving Brick Manufacturers' Association, Birmingham, Ala., is "on the job" every minute of the time fighting for the interests of the vitrified brick pavement in the South, comes to us in the form of a letter written to the editor of the Atlanta (Ga.) "Constitution" in reply to an editorial which that paper published, making some very sweeping statements about concrete pavements—statements to which Mr. Sibley took very decided exception.

It might be said, however, that no attempt to advertise himself by submitting his letter to us for publication was made by Mr. Sibley; it came thru the mails in the form of a clipping from the Atlanta (Ga.) "Constitution." Mr. Sibley's letter reads as follows:

> Editor "Constitution": I have read with interest your editorial in this morning's paper entitled "A Lesson From Macon," and while recognizing the absolute right to formulate and express your own opinion on any subject, I would respectfully challenge your statement that "all of the world is coming to recognize the fact that concrete paving, once properly put down, is, in point of durability and service, the best paving known."
>
> I would not presume to put my own personal opinion up as a criterion, because it would subject me to the criticism of being a biased witness.
>
> But the records thruout the country, as compiled by the United States government, do not sustain your claim. The department of good roads at Washington a short while ago published a bulletin on concrete pavements pointing out its advantages and disadvantages and summarized the proposition by saying that there were no data that warranted a prediction as to the life of a concrete road, because none had been in existence long enough to justify the government in doing so.
>
> It is true that there are a number of apparently splendid concrete streets in Macon, but the oldest in point of service is less than five years old. I believe Colonel Gaillard has built the best concrete paving in the South, but neither he nor I would make a prediction with certainty as to their life, under modern motor traffic, especially trucks.
>
> On your visit to Macon, you doubtless saw many miles of well paved brick streets, some of which Colonel Gaillard will tell you have rendered twenty years' service, with very little repairs and are good for many years to come. So that in learning a lesson from Macon, Atlanta should not stop at the primary grade, but go thru the high school of experience under the test of time, traffic and the ravages of the elements.
>
> But you have an object lesson right here in Atlanta in the brick pavement on South Forsyth Street, for which I furnished the brick twenty years ago. On the block above Garnett, where the pavement has not been cut into or disturbed, the wear on same is less than an eighth of an inch and the surface practically as smooth as when first built.
>
> On South Pryor Street you have recently repaved the old brick street that had given good service for a quarter of a century, with the modern wire-cut-lug brick, with cement grout filler, which is recognized by leading engineers as the best type of paving for all purposes yet devised. If Atlanta will consult the auditor's books as to cash paid out for repairs and maintenance of her various types of paving, I am satisfied the brick people will have nothing to fear from the comparison and the people will realize that building well at the outset means economy in the long run.
>
> I trust that the commissioners will investigate the object lessons at Macon and also consider well the facts obtainable at home, as well as abroad.

Mr. Sibley, whose twenty years of experience in the paving brick industry enable him to very effectively execute the duties of his office in the Southern Paving Brick Manufacturers' Association, was at Atlanta recently for the purpose of conferring with the Fulton County officials in reference to the paving of Peachtree Road to Buckhead with vitrified paving brick.

* * *

About 800 tons of coal a week, which comprises the fuel supply of the brick plants in Detroit, may shortly be released for other purposes, according to members of the Detroit Brick Manufacturers' and Dealers' Association. This represents the normal consumption of the brick plants. At the present time the various plants are running at half capacity and the indications point toward the closing down entirely of these plants within a short time.

* * *

Resigns Presidency for Missionary Work

R. A. Doan, head of the Nelsonville (Ohio) Paving Brick Manufacturing Co., recently resigned his position and interest in that concern to become secretary of the Orient of the Foreign Missionary Society of the Christian Church, at the convention of the Christian churches at Kansas City during the week of October 29.

Mr. Doan declares that it is his belief that it is better work to make good men than to make good paving brick. In his new position he pays his own expenses and when he goes abroad, Mrs. Doan, who has taken a course in business college, will accompany him as his private secretary.

Mr. Doan made his decision to leave the brick business three years ago while on a vacation in Asia, to engage in missionary work; but it was not until recently that he announced that he had made the sacrifice.

* * *

Cutting Breakage in Rolling Brick Pavement

In a recent issue of "Engineering News-Record" appeared an interesting item written by James A. Cain, telling how construction costs were lowered by overcoming a difficult problem in brick road construction. According to Mr. Cain, in laying a brick pavement at Verona, Pa., it was found impossible to ascend a steep grade over newly laid brick with a road roller because the friction pulled the rows of brick over and threw many brick out of line. The roller could descend the grade without trouble, but in order to reach the top a long detour thru side streets was necessary, involving great waste of time.

A roadway of transverse planks about 200 feet long and a little wider than the roller was then laid. The roller made a round trip over this planking in one position and the planking was then moved sidewise. The trips were repeated until the entire street had been rolled. The results were very satisfactory, the original alignment was retained, and only a few brick were broken, whereas brick were turned over and many cracked in the course of the attempt to roll the grade without planks. Shortly after the work at Verona was finished the same method was successfully used in rolling hills on brick paving at Belle Vernon, Pa.

* * *

"The Art of Stippling"

To advertise its beautiful new creation of "stippled" face brick, the Western Brick Co., of Danville, Ill., has distributed a very attractive twenty-two page pamphlet entitled "The Art of Stippling." Defining the meaning and derivation of the word stippling, the little booklet traces the development of this art and its use as practiced by artists in the fifteenth and sixteenth centuries. Several illustrations of famous stippled pictures are included in the forepart of the pamphlet.

Stippling in architecture is next considered and a gradual transition from the period when stippling was performed on buildings by the use of mallet and chisel to the present day when a surface possessing all the beauty and depth of tone and delicacy of texture of a stippled face is produced in everlasting burned clay building brick by a manufacturing process.

"The process by which brick is stippled differs only slightly than that by which stippling is produced upon engraved plates, the results in both being a surface beautifully soft and textural for the eye to rest upon but sufficiently rough to give depth and richness," says "The Art of Stippling." The process gives to the brick neither a vertical nor a horizontal texture, the effect of the texture being the same irrespective of the direction of the light. The brick is made in a wide range of reds, browns, tans and buffs, which are given at once the mellowness of tone and color that have been produced on the old brick buildings of Northern Italy by the rain and sunshine of centuries.

In the latter part of the booklet attention is called to the adaptability of Stipple brick to different types of architecture. A complete descriptive list of the "Doric" and "Gothic" types of the new product is also included, as well as a short description of the other products manufactured by the Western Brick Co.

* * *

Evens and Howard Install Bonus System

A plan of operation based on successfully employed bonus systems used in other plants, such as Bethlehem Steel and the Ford Motor Car Co., and which is designed to secure the maximum of output, has been established at the plant of the Evens & Howard Fire Brick Co., St. Louis, Mo.

This system consists primarily of an "efficiency" department, which, after investigating the plant and observing its workings, fixes a time rating for each particular job in the plant and allows a certain number of minutes in which any given task should be accomplished, provided the workman does his work without waste and loss of time.

When any workman is assigned to a certain duty, a notation is made of the efficiency department's rating and the time at which he begins. When he has completed the job, he reports to the foreman who makes a note of the time consumed and the quality of the work. This card goes into the efficiency department and bonuses are awarded workmen who make showings better than that rated for a job by the department. For instance, if a workman is on a task rated at three hours and finishes it in a satisfactory manner in two hours and three-quarters, he is given a bonus in his pay envelope, which shows that his work has been appreciated by the company.

One of the benefits of the system, as described by an employe of the company, is that it places the plant and office force on a basis of equality and draws the two departments together into closer team work than ever could be secured under the old system.

* * *

Western Paving Brick Association Provides Inspection of Pavements in Its District

In the September 25 issue of *Brick and Clay Record* mention was made of the fact that 108 miles of pavement to be built out of the city of Okmulgee, Okla., will be of brick construction as the result of a visit of members of the Okmulgee Chamber of Commerce to Cleveland. The trip, it was stated, was made for the purpose of inspecting the brick roads in Cuyahoga County.

The short account of the activities of the Okmulgee delegation on this trip failed to state that from Chicago on, the delegation was in charge of Mat Graham, Jr., highway engineer of the Western Paving Brick Manufacturers' Association, Kansas City, Mo. At Cleveland Mr. Graham was assisted by both Mr. Blair and Mr. Macdonald, of the National Paving Brick Manufacturers' Association, in showing the members of the delegation the six hundred miles of brick pavement in and around Cleveland.

Too much credit cannot be given to the Western Paving Brick Manufacturers' Association for the constructive work which it is doing, the Oklahoma delegation being illustrative of the many projects fostered by the association to advance the cause of brick pavements in the territory it serves.

One of the progressive policies which it has adopted and to which it tenaciously adheres is that of expert inspection and supervision of every brick pavement laid in its district. As it is stated by Mr. Graham, "brick pavements of necessity have to be built under our inspection, for we would not permit a road to go down in this or any other county in our district without it."

One instance of the effectiveness of this policy was related by Mr. Thurston, who told how one of his many inspectors complained to a contractor of his poor paving job. When the contractor refused to rectify it the inspector went to the city officials, who also refused to take any action. "Our inspector immediately wired the plant which was furnishing the brick," Mr. Thurston said, "and the manufacturer stopped all shipments of brick to the contractor, who was compelled to rebuild that part of the paving not up to specification before any more brick would be shipped to him."

BRICKMAKING *in* AUSTRALIA

A Concise Story of the Formation and Development of One of Australia's Clayworking Plants, and a Description of Its Manufacturing Methods

By Allan F. Gulson

General Manager, Illawarra Fireclay and Brick Company

EDITOR'S NOTE: In the following short article we are telling the story of one company's development in the clay products industry in far-away Australia, just as the manager of that company, Allan F. Gulson, has sent it in to us. Mr. Gulson's company has enjoyed such rapid expansion that it has become necessary to duplicate the plant it already has in operation, and in order that the most modern equipment be used in the new unit, he is making an extended visit to the clay plants and machinery companies of the United States, investigating the methods and determining those features which might be adapted to the operation of his plant "back home." Mr. Gulson's story is an interesting one and will take but a few minutes to read.

IF YOU TAKE THE TRAIN in Sydney, the capitol city of New South Wales, and run down the south coast line forty-four miles, you will come to a little town called Bellami. It is situated in one of the beauty spots of New South Wales, the district of Illawarra, commonly called the garden of New South Wales. It lies one mile from Bellambi Bay, on the Pacific Coast and one mile from the foot of the Illawarra mountain range, directly under the point known as Brokers Nose.

From this point between eighty and ninety miles of coast line and a dozen different towns can be seen, spread out in a beautiful panorama some 1,300 feet below. This range of mountains has long been famous for the wonderful beds of coal it contains, and some 600 feet up the face is to be seen the mines of the Bellambi Coal Co., one of the largest coal companies in Australia. The Bellambi company has its own jetties, and its own fleet of colliers in which it ships most of the coal it produces direct to its destination.

A few years ago a syndicate was formed to prospect this district for other commodities than coal, with the result that a fine seam of high-grade fire clay seventeen feet deep was discovered, with a second seam not quite so good in quality, underlying it. The clay was found at the base of the mountain range and one mile from the main south coast railway line. Upon testing, it proved to be of such value that a company was formed to manufacture refractory wares, and common building brick, which was named the Illawarra Fire Clay & Brick Co.

After consideration, it was decided to erect the manufacturing plant on the railway line, and thus have a siding for delivering the brick, and to bring the clay to the works in trucks attached to an endless rope one and one-half miles long. The end of the rope at the works is elevated so that the trucks run up an incline to bring the clay above the chutes of the grinding pans. The pans, of which there are two, each crush from 80 to 100 tons per day. The common brick are made by the method known as dry press and go directly from the machine to the kilns. The coke ovens and mines of the district are the chief users of these.

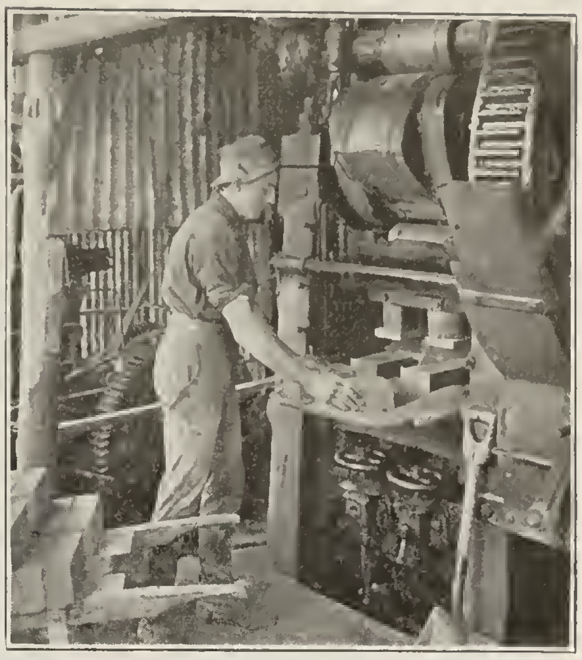
The method used for making the fire clay is by the plastic wire cut. The clay is first crushed thru the pan, elevated and carried by conveyers where it is dumped into heaps, being soaked while it is dumped. It lies there for ten days so that it may become thoroly soaked and is then taken by truck to the brick machine, pugged and made into brick, which in turn are taken and repressed in hand presses and put into the sheds to dry.

The sheds, of which there are three, are very large ones, and have floors so constructed that the exhaust steam from the engine is utilized in heating and drying the brick. Special shapes are made in hand-screw presses and large blocks are usually hand molded. The seven kilns are all of the updraft type and they face onto the siding, so that the brick can be loaded directly into the railway trucks. When the works first started twenty-five hands were employed, but the goods produced proved to be of such excellent quality that the plant had to be duplicated very soon and now fifty are required to do the work.

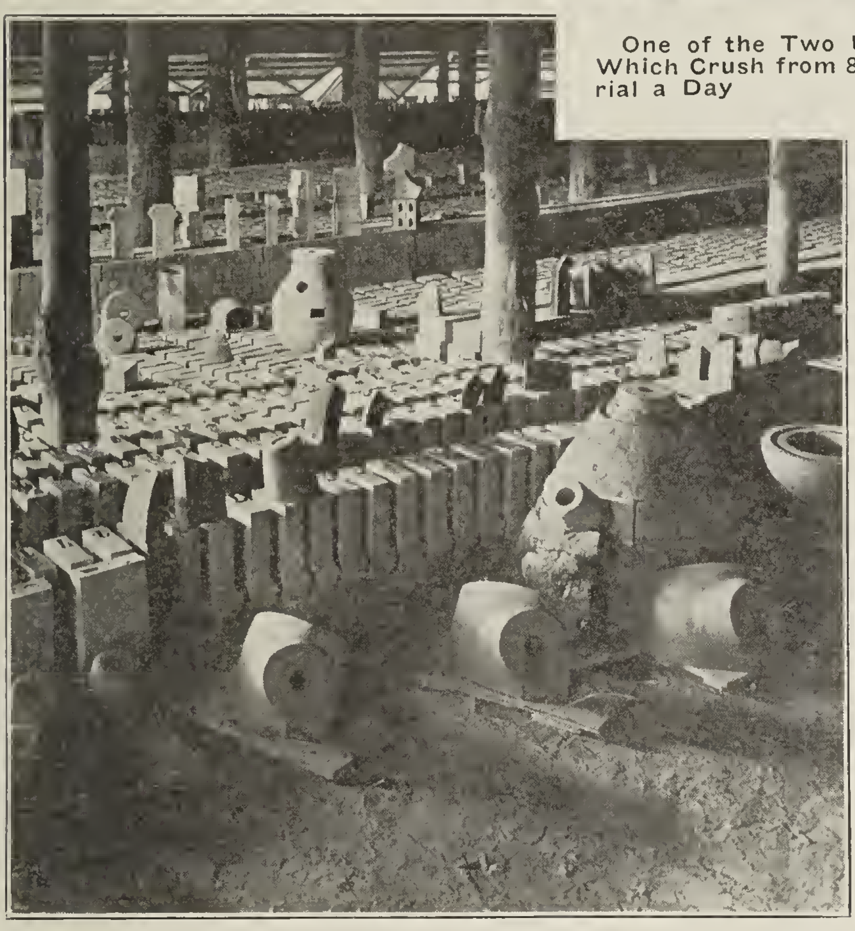
This number in its turn cannot produce anything like the quantity of brick required to meet the demands, so I am at present visiting the United States seeking machinery to again duplicate the plant. Hoping to find a class of machinery here that will give a greater capacity for less labor, I have been looking closely at a large number of works, and feel satisfied that I can procure all that I have been looking for. I have had a fine trip and wish right here to convey my thanks to the superintendents of the various machine shops and brick works I have visited for the kindness and great courtesy extended to me during my trip. I will return to Australia with many pleasant recollections of my visit here.

Stiff Mud Machine Making Firebrick for Repressing

One of the Two Underdriven Dry Pans Which Crush from 80 to 100 Tons of Material a Day

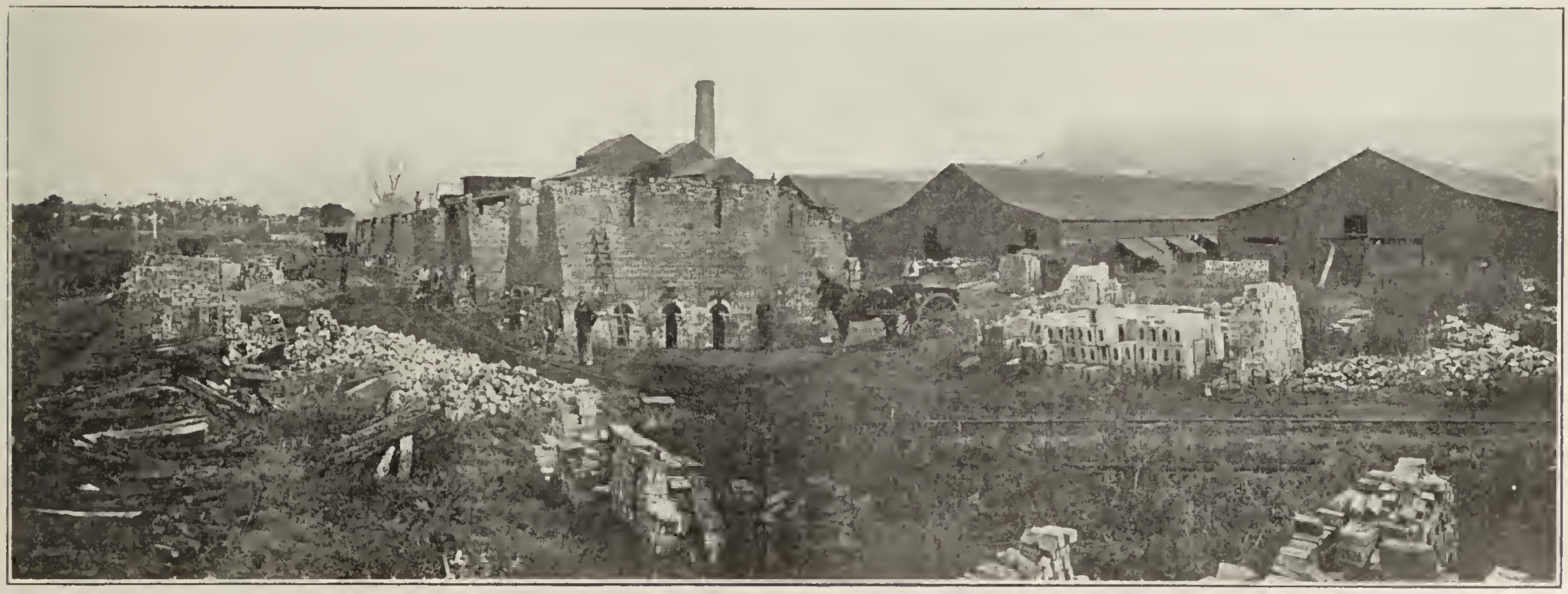


Big English Repress at Work on Stiff Mud Fire Brick



A Few of the Fire Clay Shapes Made by the Illawarra Fireclay and Brick Co., for Its Australian Market

From This Loading Dump the Clay is Taken to the Plant in Cars Attached to an Endless Rope, One and One-half Miles Long



A Panoramic View of the Illawarra Plant, Showing a Portion of the Main Line of the South Coast Railway, and, in the Distance, a Strip of the Pacific Coastline

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

Article Ten, in Which is Discussed the Subject of a Class of Rates Where Minimum is Fixed But Commodity Application Variable

By Sydney A. Hale

Synopsis: Freight rates enter into the cost of every article of commerce. Because transportation is a necessity and the service quasi-public in character, congress has seen fit to take over the regulation of rates and transportation service. It has established the standard that a lawful rate must be just and reasonable and be free from undue discrimination and undue prejudice. Rates published in the manner provided by statute have been given a legal sanctity and the obligation of their strict observance laid equally upon carrier and shipper. The applicaion of a rate in the manner contemplated by law is dependent upon its character as to commodity, quality, and territory. In studies from the commodiy standpoint, the classification is the basis of all rate-making. Out of it spring class basic rates and departures from the basic standard as expressed in exceptions to the classification. The last step is the special specific, or commodity, rate. From the quantitative standpoint, the unit of rates is a hundred pounds.

In quantitative application, rates are either carload, less-than-carload or any-quantity. The carload rate is dependent upon the carload minimum weight. In the preceding articles, the effect of the carload minimum in cases where the quantity offered was greater or less than that weight has been considered. We now come to a consideration of a class of rates where the minimum is fixed, but the commodity application is variable.

THE PRACTICE of shipping mixed carloads is of value to the carrier in that it results in a heavier loading of the cars and in fewer claims for loss and damage. It is also of value to the shippers in that they receive upon less-than-carload shipments the benefit of the carload rate. It also involves a more expeditious service and the goods arrive in better condition. It enables the retailer also to do a larger business on a smaller investment.—Furniture Manufacturers' Assn. v. A. A. Rd., 34 I. C. C., 262.

JUSTIFICATION FOR MIXED CARLOAD RATES

Justification of a differentiation as between carload and less-than-carload rates rests primarily upon the difference in the costs of handling the two classes of traffic. Whether a given quantity of freight, approximately a carload, is to be treated as one physical unit or as several is the question of controlling importance and it is upon this test that the extension of carload rates to pooled shipments is based.* It is but a step from the conclusion that, if several lots of the same commodity handled as one carload are entitled to the carload rate, it would not be difficult to conceive circumstances under which several lots of different commodities, moving under one bill of lading from one consignor to one consignee and from one point of origin to one destination, might also properly be treated as a carload. The result is that commodity rates are not always limited to one article, but may authorize the inclusion of several articles under one rate. In the same manner, shipments under class rates may also enjoy a carload rating upon a mixture.

The employment of mixed carload rates may be supported by either transportation or commercial reasons, or both. If the subsidiary questions of risk and value be eliminated, there is little, if any, difference in the cost of the physical handling of a given quantity of freight filling a given car, when the freight is all of one kind, than when it is of several kinds. This is recognized by the official classification which has a mixing rule permitting the inclusion of practically every article carrying carload and less-than-carload ratings in a mixed carload under carload rates. The possibilities of mixture from the standpoint of relationship of commodities under this rule have not escaped criticism from traffic men in other territories.

WHERE COMMERCIAL CONDITIONS CONTROL

In southern and western classification territories and in individual rate issues generally, the extension of mixed carload ratings is governed by consideration of commercial and trade, rather than by physical transportation factors. Neither of the two classifications last named carries any general mixing rule. Both are specific as to the particular articles that may move under mixed carload ratings. It is recognized that certain articles may be so analogous or may be necessary to cover a business transaction as, for example, the shipment of engines as a necessary part of a machinery installation or the inclusion of liquid cement, tin roofing caps, nails, and wooden strips with roofing paper compositions that, in a carload shipment of the major commodity, it is only fair to carry the auxiliary commodities at the carload rate applicable to the major article.

The establishment of proper mixed carload rates, either class or commodity, is particularly advantageous to the jobber and the small shipper and receiver of freight. In fact, just what articles may be included in a car in order to take a certain rate is of as much importance to such men as the actual rate itself. "The liberalization of mixtures," declared the Commission in a case involving a general consideration of the Western Classification, "is in the interest of the whole public. Artificial restrictions upon mixtures

(*Continued on Page* 880.)

---

*See the eighth article in this series for an explanation of pooled carloads.

The SUPERINTENDENT

Helpful Hints for Practical Men
Whose Problem is Maximum
Production With Minimum Cost

Solving a Ditch Problem with Dynamite

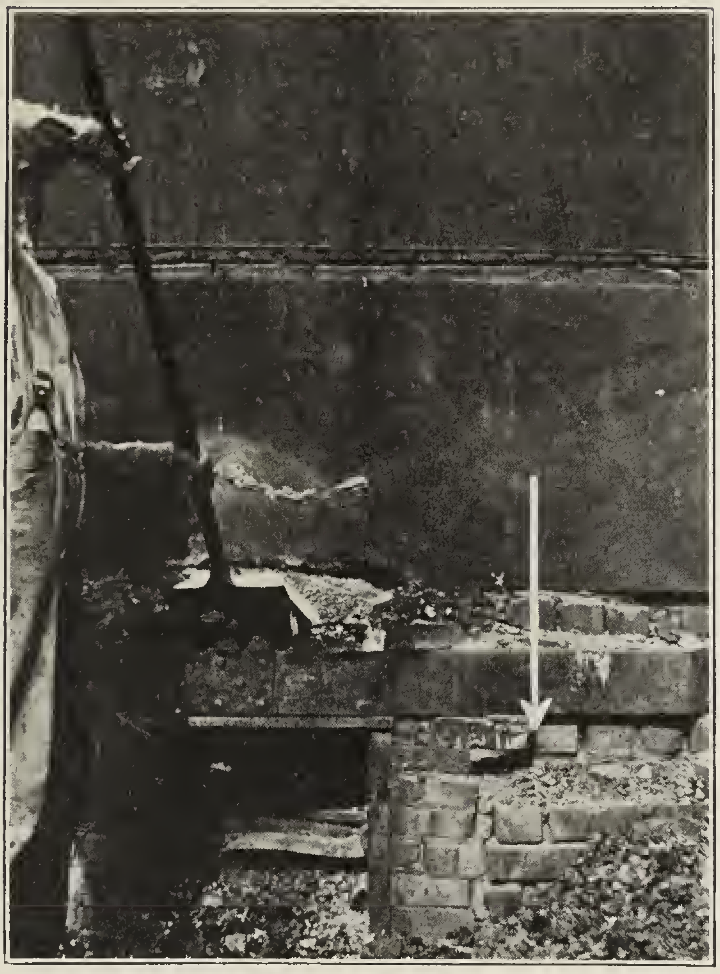
One of the plants of the American Brick Co., located in Connecticut between Berlin and Hartford, discerned an opportunity to cut costs by eliminating one of its pumps. In order to do this it was necessary to build a larger channel to carry water into the plant. A serious obstacle, however, presented itself. The channel, which was to be 530 feet long, had to be dug thru a tangle of under-brush. The soil thru which it had to pass was quicksand and clay. Digging under these conditions was impossible. Refusing to be "stumped," the company turned for a solution of the problem to blasting.

The services of a blasting expert were obtained, who, after going over the site of the channel, decided that it could be built by the use of dynamite. It was found that comparatively little trouble was encountered in putting bore holes down into the sandy, sticky clay and very little interference was felt from the underbrush. It was necessary to push the cartridges down into the hole with a tamping stick, altho no tamping was required because the water filled the holes which makes the best kind of tamping.

Loading in quicksand, however, was found to be more difficult. When a hole was bored in quicksand it immediately filled after the bar was withdrawn. The strip of quicksand measured about 35 feet across and in order to load this section it was necessary to make tin tubes, the shape of torpedoes, about one-half inch longer than a stick of dynamite. Cartridges were encased in the tin tubes and then pushed down into the quicksand to the required depth.

The charges were placed about two feet apart both in the quicksand and in the clay. In one hole the charge consisted of a cartridge and one-half; in the next hole was one cartridge; then a cartridge and one-half, and so on alternately down the line. The cartridges were sunk to a depth of about two and one-half feet. The resulting shot gave a ditch about three feet deep and six feet wide.

The experience of the American Brick Co. in overcoming the troublesome ditching problem should be of value to manufacturers who are confronted with similar difficulties. It is often with great difficulty that water problems similar to that outlined are solved by the use of ditching and dredging machines, whereas the use of a little dynamite, mixed with a little brains, would effect a very satisfactory and rapid solution of the problem.



DISPOSAL OF KILN ASHES

A very harmful practice countenanced on many clay products plants is the method of disposing of hot ashes, which, in many cases, consists of shoveling them up against the side of the kiln, where they are allowed to remain until carted off to the dump. The above picture admirably illustrates the result of this dangerous yet almost universal practice. Usually the wall against which the ashes are piled is unprotected and the mortar between the brick is rapidly deteriorated by the action of the hot ash gases. The brick are loosened and fall out, the kiln is gradually weakened and its life considerably shortened. Also, the defective masonry is by no means an asset, considered from the esthetic sense.

* * *

Some Suggestions in Dryer Construction

In a communication received from a ceramic engineer in charge of one of the large paving brick plants in Illinois, in which he discusses some points concerning dryers he states that he considers it advisable, when hot air enters dryer tunnels at the top that the saturated air at the cool end of the tunnel be exhausted at the floor, in order that a more complete circulation of the gases around the ware being dried may be obtained.

The same is true in the case of a stack dryer; here, the hot end openings thru which the waste heat gases enter should be in the floor of the tunnels, otherwise, at times a lamina of air will form in some tunnels which will cling to either the floor or the ceiling. Altho by testing the tunnel with an anemometer a sufficient velocity of air might be found to be passing thru, yet the ware would derive but very little benefit from it because

Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited

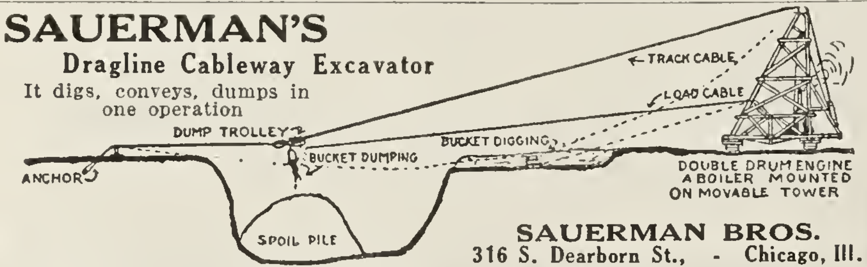
CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo, Michigan, U. S. A.

GOODRICH Belts
"Commander" Transmission and "Longlife" Conveyor Belts are unbeatable for the Brick and Clay industry.
THE B. F. GOODRICH COMPANY
Factories: AKRON, OHIO Representation Everywhere

UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket
Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used. Sprockets, Buckets, Elevators, etc.—Send for Catalog
"The Chain of Double Life"
THE UNION CHAIN & MFG. CO., SEVILLE, OHIO

DO YOU NEED MONEY?
We Specialize in Bonds on Clay Properties.
We Arrange for Their Issuance and Sale.
We have rendered aid to many clay product manufacturers desiring to expand and improve their properties.
Write Us—Perhaps We Can Help You
F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILL.

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.

"SCANDINAVIA"
(Solid Woven Cotton Belt)
TRULY THE BRICKMAN'S BEST BELT
Scandinavia Belting Co.
106-108 Reade Street, New York
Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.
Canada: Federal Engineering Co., Limited, Toronto and Montreal.

TO STOP advertising to save money is like stopping a clock to save time.
—*The Little News.*

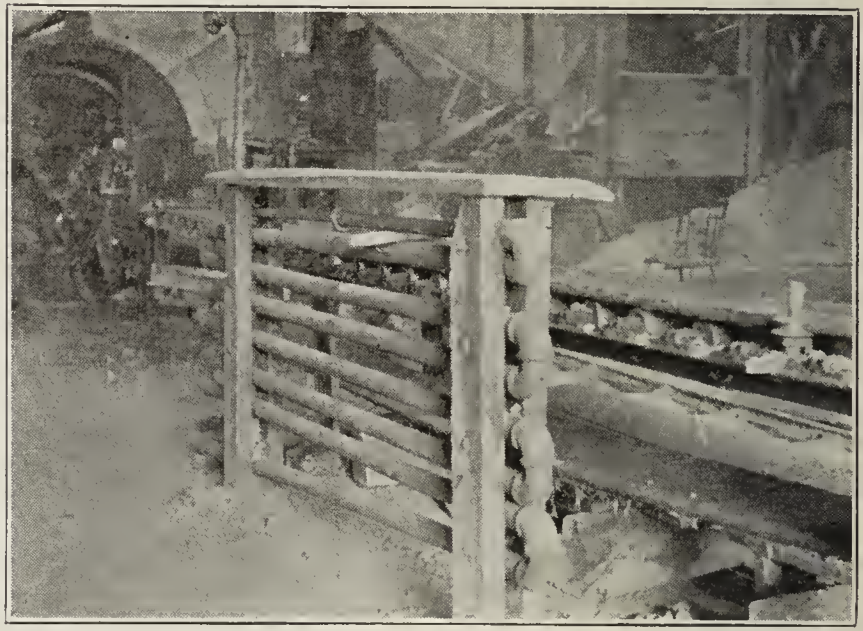
of its sheet formation and incomplete circulation.

In considering a dryer for a certain capacity, a certain length of tunnel must of course be assumed, which also governs the temperature permissible at the hot end. In most cases it is not advisable to have the tunnel shorter than twelve car lengths. Also, whether a single deck or double deck car is to be used is an important factor in determining the construction of the dryer. In operating a dryer of the exhaust fan type, one has probably a little better control over dryer conditions than he has in operating a stack dryer, since both ends are under more direct control. The stack dryer, however, has been found cheaper to operate.

⁂

Keeping the Men Warm in Winter

This photograph shows an attempt on the part of the management of a large face brick plant to make the conditions in the belt room of greater comfort to the workmen. The plan of providing comfort to the laborers in winter is an admirable one. No one will dispute the fact that better working conditions mean better efforts on the part of the laborers.



Keeping the Hackers Warm in Winter Means Greater Output. This Firm Does it by Erecting a Radiator, at a Low Cost and With a Small Amount of Labor, Alongside of the Off-Bearing Belt.

At but very little expense the "radiator" shown in the illustration was constructed, placed alongside the off-bearing belt, and connected up with the boiler. Another of the same type, but of different size was placed upon the pugmill platform and another alongside the brick cutting machine. Together, the three "radiators" furnished sufficient heat to keep the workmen warm and comfortable during the cold weather.

In regard to the radiator at the off-bearing belt, however, we believe that it could be placed in a position which would be a better one in many respects. Some plants have placed their steam coils beneath the off-bearing belt. This serves to keep the belt dry and the source of heat is as near as it is possible to bring it to the off-bearers.

It will probably be well to call attention to the looseness of the belt. For best results the belt should be more taut. An idler or two placed at a convenient spot would improve conditions considerably.

An Oiling System on Represses

The essential features of a paving brick repress machine, oiling system as installed by Superintendent Yohe, of the Royal plant of the Metropolitan Paving Brick Co., at Canton, Ohio, are as follows:

An oil tank with a capacity of one hundred gallons is mounted on the pug mill platform slightly higher than the repress machines and a pipe line leading from this tank is connected to each repress. Pet cocks are used on each line to regulate the stream of oil. The large tank is connected to the oil house by means of a small pipe line thru which the oil was forced by steam.

* * *

Support for the Kiln Crown

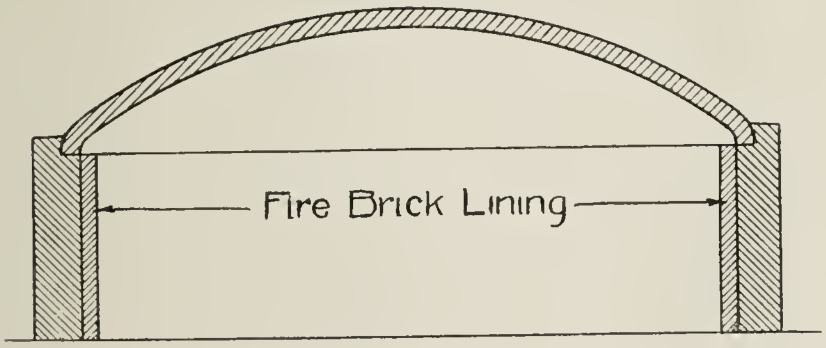
The subject of the proper design and construction of kiln crowns is a very important one. If a superintendent could do away with the high frequency of crown repairs, he would eliminate a constant source of worry and expense.

One point of kiln crown construction which, if employed, might reduce crown deterioration, has been recommended by a prominent ceramist in an article written by him two years ago but does not seem to have been given much attention; it is that of the starting point of the crown.

Instead of supporting the crown on the fire brick inner lining, it should be set back on the main wall. Everyone has noticed that crowns invariably crack badly over each firebox. This is partially due to the greater expansion over each fire and partially to the continued burning away of the lining at that point.

Another difficulty often met with is that of that portion of the crown coming down during the tearing out of the fire brick lining over the fireboxes, when repairs at that place are necessary.

These troubles could be done away with and many advantages gained by building the crown upon the outer kiln wall. Thus, for instance, the expansion and contraction of the wall lining will not rack the crown as it does when the crown is built on the inner wall. The outside wall does not expand or contract nearly so much as the inside lining and it is also built stronger. For these reasons it seems that the logical place to start a crown is on the main wall and not on the inner lining.



By Supporting the Crown on the Main Wall of a Kiln, it is not Subject to Such Severe Conditions, as the Large Expansion and Contraction of the Firebrick Lining; and it Rests Upon a Much Stronger Support.

* * *

Sand-Lime Brick Convention

The fourteenth annual convention of the Sand-Lime Brick Association will be held at the Lafayette Hotel, Buffalo, N. Y., January 29 and 30, 1918.

The pet practice of an old and faithful employe in the matter of joining belts may be costing you more than it would to introduce him to

CRESCENT
BELT FASTENERS

Ask us and tell him.

CRESCENT BELT FASTENER CO.
381 Fourth Ave. New York, N. Y.

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.

Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

B. & B. Aerial Tramway Systems

Handle any kind of loose material expeditiously, economically and with absolute safety.

Where the grade is sufficient, gravity supplies all the power, and one or two men can operate an entire tramway.

Ask for Catalog 16 giving detailed information.

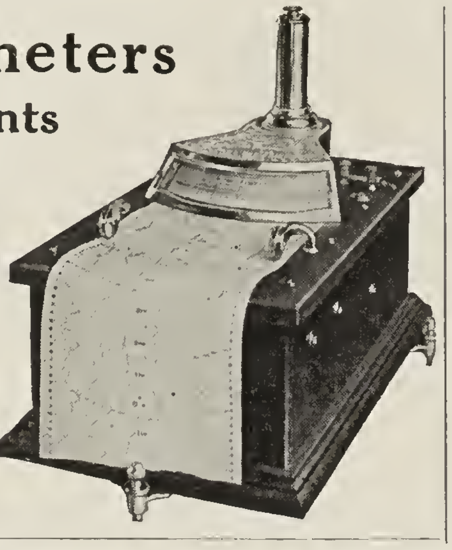
Broderick & Bascom Rope Co.
St. Louis, Mo.
New York Seattle

Hill Friction Clutches
Collar Oiling Bearings
and
Complete Power Transmission Machinery Equipments

Catalogs upon Request

Hill Friction Clutch Pulley
Smith Type
(Patented)

The Hill Clutch Co.
Cleveland, Ohio
New York Office, 50 Church Street



Price Pyrometers on Small Plants

It isn't necessary that you have a large number of kilns before our pyrometer is valuable. It saves tons of coal, labor and time on the two, three and four kiln plant.

The Price Electric Co.
12367 Euclid Ave.
CLEVELAND OHIO

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

They Drill Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

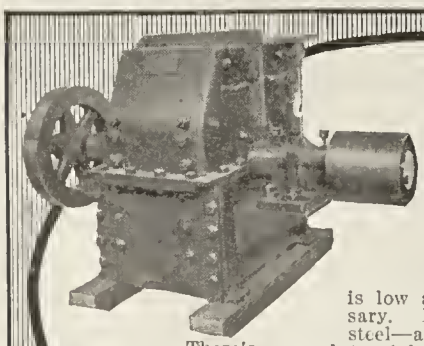
They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. **It paid for itself in the first three months;** it saves enough powder each year to more than pay for its initial cost."

This is interesting because it is a fact.

Send for Bulletin No. 4.

The Sanderson Cyclone Drill Co.
Orrville, Ohio



An investment that stands

The initial cost of a

K-B Pulverizer

is low and covers about all the outlay necessary. It is built throughout of high grade steel—and is practically indestructible. There's a substantial saving in power costs as well.

Send now for catalog with interesting facts and figures.

K-B Pulverizer Company, Inc.
86 Worth St., New York

QUESTIONS

A Three Cent Stamp May Bring You Advice That Will Stop a Waste, Improve Your Ware or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

Effect of Freezing on Pugged Clay

835. *Pennsylvania.—What effect, injurious or otherwise, has freezing on pugged clay?*

I have in mind a shipment of pugged pot (glass) clay which became frozen in transit, and is now being thawed out at room temperature. I am wondering if that clay will have to be dried out completely and repugged or if it can be used direct. Will you please give me your opinion as to what would be the most advisable course to pursue.

We do not believe it is necessary to dry out the shipment of pugged pot clay which became frozen in transit to your factory. The following are some of the possibilities which may occur in the freezing of pot clay, and it is from a study of these possibilities that we have drawn our conclusion:

The bacteria and colloidal matter may have been killed, thus diminishing plasticity; the salts may have segregated in a moraine at the edge of the freezing zone; the plasticity, provided the bacteria and colloidal matter has not been affected to a great extent, would probably increase due to the finer grain. It is also quite possible that more water will be required to obtain the same degree of plasticity due to the greater surface factor caused by the finer grain.

* * *

Various Motors and Their Advantages

839. *Maryland.—Will you please inform me which is the best kind of alternating current motor to use for driving a soft mud machine and attendant equipment. I have a form L. motor, 900 r.p.m., 60 cycle, 3 phase, 220 volts, of the internal resistence type (not squirrel cage). I am offered in exchange for this motor, a slip ring motor, which I believe to be best for my use as I understand that this type of motor develops more h.p. in starting and will carry more overload; and also is more nearly "fool-proof." It is possible for an inexperienced or careless workman to burn up the internal resistence type of motor by neglecting to remove the resistence coil from the motor in starting.*

The Form L induction type motor is an internal resistance motor which is started up by using a hand lever which gradually cuts out the internal resistance and brings it up to speed. The starting current required is practically in proportion to the torque developed, that is, the motor uses a 150 per cent. current from the line when developing 150 per cent. torque.

The slip ring motor of which you write has practically the same characteristics, only in this case the windings are brought to slip rings on the motor shaft, and from there are connected to an external controller containing resistance, the resistance being cut out by the movement

and ANSWERS

Best Authorities in Every Clay-working Branch are Called into Consultation — Their Advice is Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

---

of the handle of the controller. In other words, the two motors are practically identical except in the manner of cutting out the starting resistance. The slip ring motor has the advantage of having an external controller so that you can see at all times just what is happening, while in the case of the Form L induction motor, if a man starting it did not push the starting lever in far enough to cut out all the starting resistance, it might easily be turned out.

The squirrel cage type of motor has the additional advantage of simplicity, ruggedness, and freedom from troubles, being practically foolproof. It, however, takes a larger starting current from the supply system to develop the same torque than do either of the above-mentioned type motors, so that if you are limited as to the amount of current on the supply line the starting and stopping of the squirrel cage type motor would be apt to cause disturbance in the system, causing a drop or fluctuation of voltage.

If the slip ring motor is furnished with the controller so arranged that if the handle is released when starting before the resistance is entirely cut out, by pushing the handle over to the extreme limit, it will fly back automatically, you would then have just this much additional protection against burning out the starting resistance, as would be the case in the Form L motor.

* * *

Mixing Lime With Red Burning Clay

836. *Quebec.—Will you kindly send me some information about mixing lime with red burning shale to make a buff colored brick?*

We do not believe that lime can be mixed with red burning shale to make a buff colored brick, with any degree of success. It is the matter of common knowledge among ceramic engineers that lime in clay will, in the burning process, mask the iron which ordinarily would produce a red color. When this is done the usual result is a dirty buff color. It is our opinion that this result cannot be obtained synthetically.

As you probably know most brick colors are produced by manipulation during the burning period, which in turn is governed by a knowledge of what the clay contains. Various attempts have been made to produce different colors by adding other ingredients, but these have, for the most part, been unsuccessful.

In Vol. 5 of the Transactions of the American Ceramic Society there appears a paper read by Edward Orton, Jr., on "The Role of Iron in Burning Clays," which we believe it would pay you to read, if you have not already done so.

ORIGINAL Boss SYSTEM COMMON SENSE APPLIED TO **Drying and Burning** ORIGINAL Boss SYSTEM

Boss Ten-Hour Dryer

Would you like to really dry your brick and do it in half less time?

Boss System of Burning Brick

Would you like to improve the quality of your brick and reduce your cost of burning?

Then write for information and we'll SHOW YOU HOW!

JOHN C. BOSS COMPANY
Monger Building - Elkhart, Indiana

"CRIMORA"

That's the MANGANESE you should always use—then you can sell your trade a real specialized brand of brick in

BLACK, SPECKLED OR GREY TONES

Also—you can always depend on CRIMORA MANGANESE DIOXIDE to produce the exact grey-black facings you desire. We can furnish it in any grade or size desired.

Crimora Manganese Corporation
30 East 42d Street New York

SIL-O-CEL PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK CHICAGO PITTSBURGH LOS ANGELES SAN FRANCISCO
11 Broadway Monadnock Bldg Oliver Bldg Van Nuys Bldg Monadnock Bldg

Write nearest Office for Samples and Information

Base Metal Couples and Low Resistance Instruments are absolutely unfitted for use on Clay plants.

We do not and we will not sell that class of equipment for measuring temperatures exceeding red heat.

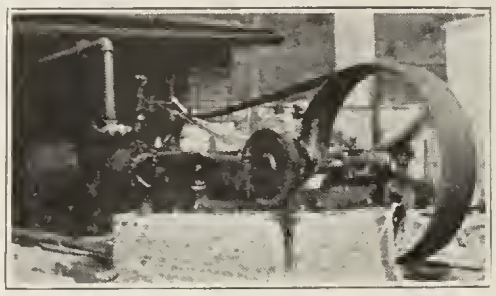
STUPAKOFF PYROMETERS

for high ranges of temperature are equipped only with rare metal couples and high resistance galvanometers. They are dependable and we guarantee satisfaction.

The Stupakoff Laboratories
Pittsburgh, Pa.

FANS For every Dryer requirement. We will estimate for you and deliver promptly. Below is shown one of our installations on the plant of the Paterson Clay Products Co., Clearfield, Pa.

For estimates, plans or information address our Pittsburgh office, 8044 Jenkins Arcade Bldg., or the home office.



Blairsville Machine Company

Blairsville, Pa.

Specialists on Fans for Dryers

The House of Taylor

IN THE HEART OF THINGS

Hotel Martinique

Broadway, 32ndSt., New York

One Block from Pennsylvania Station

Equally Convenient for Amusements, Shopping or Business

157 Pleasant Rooms with Private Bath

$2.50 Per Day

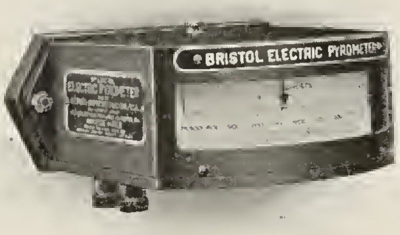
257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure

$3.00 Per Day

Also Attractive Rooms from $1.50

The Restaurant Prices Are Most Moderate

400 Baths
600 Rooms



Accurate Records of Kiln Temperatures

Every fluctuation in temperature, and when the fires were started and stopped is plainly recorded by

TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE

PYROMETERS

The recording instruments may be installed in the manager's office or other convenient point where they are protected from dust and dirt.

At the kilns a set of Bristol Indicators show the men at all times what temperature they are getting inside of the kiln.

The superintendent can detect any inefficiency by a glance at the charts and knowing this stimulates the men to do better work.

Write for Bulletin 205

THE BRISTOL CO., Waterbury, Conn.

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

A. D. Johnson and Henry Simons are putting $40,000 into an earthenware and brick plant at El Centro, Cal.

J. P. Turpen, sales manager of the Columbus office of Thomas Moulding Co., visited the Chicago offices of the company recently.

H. R. Straight, superintendent of the Adel (Iowa) Clay Products Co., has just returned to his home city from a business trip to Arkansas.

Joseph Nicholson, president of the Toronto (Ohio) Brick and Fire Clay Co., was a business visitor in Columbus the latter part of October.

The Pennsylvania Clay Products Co., West Winfield, Pa., announces the death of Frank B. Hartford, which came at his home in Toronto, Ohio, on October 10, after an illness of six weeks.

Aaron M. Weil, president of the Crown Pottery Co., of Evansville, Ind., who has been in bad health for the past several months, is showing some signs of improvement, and his friends look for his speedy recovery.

F. R. Turton president of the Refractory Magnesite Co., of Preston, Cal.. was a visitor in San Francisco, last week. He reports that there is a big demand for his products and that his plant is running at full capacity.

While A. H. Bredenkamp, one of the managers of the Standard Brick Co., at Evansville, Ind., was sleeping peacefully one night last week, burglars broke into his home and removed a purse containing about $35 from a pocket of his trousers.

A. C. Hitzler of the Pacific Tile & Terra Cotta Co., of Los Angeles, visited Ventura, Cal., recently to arrange for the construction of a tramway which would transport the material for the company from Kemp to the main road.

Henry Clements, manager of the Cannelton (Ind.) Sewer Pipe Co., reports that he has enjoyed a satisfactory business during the past summer and fall. Mr. Clements was one of the active workers in the recent Liberty Loan campaign in his home city.

Michael Helfrich, president of the National Pottery Co., of Evansville, Ind., subscribed for $150,000 in Liberty bonds in the campaign conducted in Evansville and which came to a close on Saturday, October 27. The city of Evansville raised more than $4,000,000 in the campaign.

John Andres, of the Standard Brick Manufacturing Co., of Evansville, Ind., has been elected one of the directors in the Evansville Chamber of Commerce. Mr. Andres was one of the charter members of the Chamber of Commerce and takes an active interest in civic affairs of Evansville.

A. S. Cunningham, formerly superintendent of the Ione (Cal.) Fire Brick Co., has recently been appointed superintendent of the Lehigh Brick Works at Allentown, Pa.

While his friends in the West regret the loss of a man of his ability they are extending their congratulations to him for being called to a larger field.

William Hankins recently resigned his position as manager of the Paola (Kan.) Brick & Tile Co., and has returned to his home in Crawfordsville, Ind. J. W. Jenkins, the former manager of the Paola company, has reassumed the duties of this office. Mr. Hankins was called to his home by the death of his mother-in-law and, according to present plans, will not return to Paola.

Fred L. Dickey, of the Walter S. Dickey Clay Manufacturing Co., of Kansas City, headed the division of brick and tile manufacturing and selling companies in the big Liberty Day parade held at Kansas City, on October 24. The parade was the largest that Kansas City has ever witnessed and required more than three hours' time to pass a given point. Its purpose was to boost the subscription to the Liberty Loan. All of the brick manufacturing plants and selling offices closed for the afternoon of the parade.

Henry W. Flentke, of Evansville, Ind., died of pneumonia a few days ago at Prescott, Ariz., where he had gone a few days before to look after some business interests. The body was taken back to Evansville for burial. For many years Mr. Flentke was general manager of the Crown Pottery Co., of Evansville, and he was well known to the trade thruout the central west. He was also interested in several other enterprises in Evansville. Besides his wife he is survived by one son, three daughters, and two brothers. Mr. Flentke was fifty years of age at the time of his death.

Alberta

What is said to be Canada's largest common brick plant, which is operated by the Acme Brick Co., at Edmonton, Alberta, has commenced manufacturing brick again after a shut down of about two months. Owing to the scarcity of labor caused by the harvest, the directors of the concern thought it advisable in the interests of the nation to suspend operations during the harvest season so as to allow their employes to fill the rank of workers available for the farmers. The crops are now well in hand and the workers are once more available, hence the plant will again operate and run as long as weather conditions will permit. In order to catch up with the demand, between fifty and sixty men will be employed and the plant will work overtime if necessary.

California

The Stockton (Cal.) Fire & Enamel Brick Co., recently increased its capacity by installing new motors with an increase in power of nearly 40 per cent.

An opportunity to sell a million and a quarter brick on contract to Japan was recently lost because of the scarcity of ships. Brick men on the Pacific coast bid on the contract and it is said their figures were the lowest but bottoms could not be secured.

The Pacific China Manufacturing Co., of Richmond, Cal., has just been incorporated for the purpose of manufacturing earthenware and pottery. The capital is placed at $25,000 and the directors named are: H. T. and H. C. Epperson, of Richmond, and J. D. Coleman, of San Francisco.

Figures given out by the magnesite producers of Porterville Cal., show that during the month of October 100 cars of calcined ore, representing roughly 8,000 tons of

Tycos
FERY RADIATION
PYROMETERS
Eliminate Guesswork from the Manufacture of All Products requiring extremely high Temperatures * * * *

We Manufacture - Thermometers and Instruments covering every Temperature requirement in Metallurgy and Chemistry

A Catalog Cheerfully Sent Upon Application

The Taylor-Cambridge Division
Taylor Instrument Companies
Rochester, N.Y.

A Reserve Supply of
HETTRICK
Red Stitched Canvas
BELTING

for every important drive in your plant should be in your store room. Don't take a chance with delay. Hettrick belts are good belts.

Hettrick
Mfg.
Co.
Toledo, O.

Brickyard Bill Says:

"Uncle Sam's army off'cers has sure got some man's-size job, makin' a uniform high-grade product out o' all them diff'runt v'rieties o' green, m'terial. But it kin be did. Th' Standard Brick Drier's been a-doin' it f'r thutty years."

The Flexible Heating System of

The Standard Drier

makes it applicable to ALL clays and ANY steam conditions. There is nothing theoretical about The Standard Drying System. The piping is applied in the manner that our long experience has demonstrated to be most efficient in meeting the requirements of the various natures of clays. The heating apparatus is FITTED to the NEED in every case.

Write for complete description and free estimate. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

Gold Medal Award

PANAMA-PACIFIC INTERNATIONAL EXPOSITION SAN FRANCISCO MEDAL OF AWARD MCMXV

Panama-Pacific Exposition

for

THWING

HIGH RESISTANCE MULTIPLE RECORD

PYROMETERS

Their Merits are Vouched for by Hundreds of Satisfied Users

Ask for our New General Catalog No.8

THWING INSTRUMENT CO.

3336 Lancaster Ave. - Philadelphia, Pa.

crude material, were shipped from that place to eastern points. At the prevailing prices these shipments had a value of about $160,000. There is no indication of any change in the brick demand for all classes of this ore.

The California Pottery Co. had an excellent exhibit of its ware at the California Land Show, which was conducted in San Francisco, Cal., the latter part of October. At the same show the Port Costa (Cal.) Brick Works had a fine collection of photographs showing how the company made brick at its plant at Port Costa.

The Port Costa (Cal.) Brick Co. has recently closed a contract with the Union Iron Works for a milloin and a quarter brick to be used in its shipbuilding plant at Alameda. These brick will be both common and face. Very extensive improvements are under contemplation by this brick plant. C. G. Burg started east last week to examine some new kilns and other equipment needed in the improvements.

N. Clark & Sons report that the government is purchasing a large quantity of sewer pipe from them and that their reserve stock is getting low. The insurance on their plant, which was badly damaged by fire several months ago, has not yet been wholly adjusted, but it is expected that this matter will soon be attended to. Plans are prepared to rebuild larger than ever when this is done.

New bids are being solicited for the construction of a new high school building at Palo Alto, Cal. This is the third time that bids have been asked for this building. The architect estimated that the building should cost $200,000, but so far the lowest bid is $50,000 in excess of that amount. Changes in the plans have been made and a new call for figures issued. It will take about $50,000 worth of brick to complete the job.

The Pratt Building Material Co. is wrecking the factory of the Patent Brick Co., at San Rafael, Cal., and shipping the brick to San Francisco and interior points. The plant has not been operated for about fifteen years. The Pratt company estimates that they will ship about 4,000,000 brick from this plant. The Pratt Building Material Co. is also starting a new rock crusher at Raymond, Mederia County, Cal., It is already shipping the crushed rock, for which there is a big demand.

The Cannon-Phillips Co., of North Sacramento, Cal., successor to the Dennison Block Co., is proceeding with the installation of several new improvements on its plant near Ben Ali. A large structure is being erected in which clay will be stored so that work will not be hampered in the rainy season. The clay storage shed is about 200 feet, long, and a switch is being laid so that several cars may be unloaded at the same time. The shed will have a capacity of several hundred tons. Labor-saving machines for unloading the cars are also being installed.

While the brick industry as a whole is quiet, due to the conditions in the building trade arising out of the war and the scarcity of cars and water transportation facilities, there are still some evidences of activity. A number of jobs are being figured on, but they are mostly confined to warehouses and additions to various plants engaged in government work. These structures are individually large, and while they are comparatively few in number they consume large quantities of brick. The hope is expressed among the brick men that 1918 will develop enough work of this character to keep the plants supplied with sufficient business to make it worth while for them to keep up the struggle against the adverse conditions of labor and fuel. As all plants in that section use coal as fuel, manufacturing problems increase as reports on the fuel condition becomes more discouraging day by day. The same may be said of labor. The report that several large shipyard buildings will be constructed in the near future on San Francisco Bay indicates that there will be further competition arising for labor, which will make it even harder for the brick manufacturers. Transportation, labor, and fuel are the matters which are worrying the brick men more than the change in the source of demand for brick, that is, for governmental rather than for civic purposes. For sewer pipe, the demand also comes in the main from the government. In fact, the trade in common with many other lines of business is finding the government its best customer; those branches making what the government needs most report their business as booming while the orders on hand in other branches of the industry are comparatively few.

Connecticut

Serious damage resulted from a fire in the brick sheds of the Merwin Brick Co., at Berlin, Conn., early on the morning of October 10. The blaze started from a kiln which was being burned and before it was controlled, property valued at nearly $1,000 had been damaged.

Several of the brick yards in central Connecticut have suspended work for the winter season and others will do so within the next few weeks. The manufacturers have met with varying success during the summer. Prices for brick have been high, but it has been almost impossible to secure and retain sufficient experienced help to operate the yards at full capacity, and during the latter part of the summer building operations fell off to such an extent that the demand for brick was materially reduced. Some manufacturers, however, had taken contracts for their entire output and were not affected by the stagnant market, while others were less fortunate. Freight congestion, which seriously retarded deliveries, also had its effect on the business.

Delaware

The Peach Kaolin Co., of Delaware, has been incorporated with a capital stock of $50,000 to mine kaolin, sand, etc. The incorporators include Carl L. Martin and J. Elliott Newlin, of Philadelphia, Pa., and H. Roy Freck, of Wilmington, Del.

Georgia

The Georgia-Carolina Brick Co., of Augusta, Ga., has moved into its new offices located in the new Lamar Building. It is now arranging a very beautiful display room in the front part of the building.

Illinois

The St. Anne (Ill.) Brick & Tile Co. has undertaken to replace all of its old kilns with new ones. A whole new plant will eventually be installed.

The drain tile plant at Timewell, Ill., owned by C. J. Davis, is working at full capacity to supply the unusually good demand being made for its product. A shipment of four carloads of tile was made to Mt. Sterling last week.

The Illinois Brick Co.'s large plant at Manteno, Ill., has started operations again after having been idle since

Marion

Steam Shovels, Dredges, Draglines and Kindred Machinery

STRIPPING a 17-foot overburden of clay to get to a bank of genuine "Galesburg Shale," and then digging this shale, to be made into its famous 10-pound paving brick, The Purington Paving Brick Company, of Galesburg, Illinois, employ three Marion Shovels.

The oldest of these, a pioneer "Marion" in the field of brickmaking, is still making good in hard stripping, six months in the year. One "Marion"

Loads Shale for 350,000 Bricks a Day—Has Had Two Overhaulings in Ten Years

—and has not been taken from the pit once during the whole time.

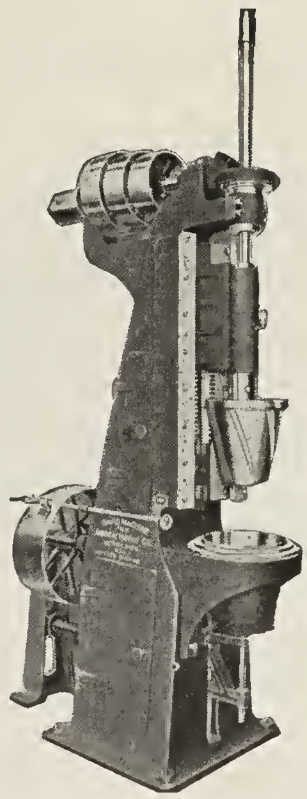
Marion Shovels are honestly designed, honestly built, honestly sold; they do their work with plenty of "reserve power" left over.

We shall be pleased to furnish particulars applying to your special proposition, without obligating you in any way, if furnished the necessary facts.

The Marion Steam Shovel Company, Marion, Ohio

Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle

217 ESTABLISHED 1884

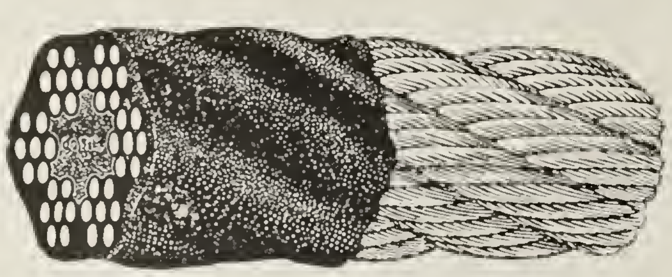


FLOWER POTS

You can manufacture them on most any brick or tile plant as a profitable side line. Send us a sample of your clay. Let's find out if you can do it.

BAIRD MACHINE & MFG. CO.

54-56 Jefferson Avenue Detroit, Michigan



Take Extra Good Care of Your Wire Rope

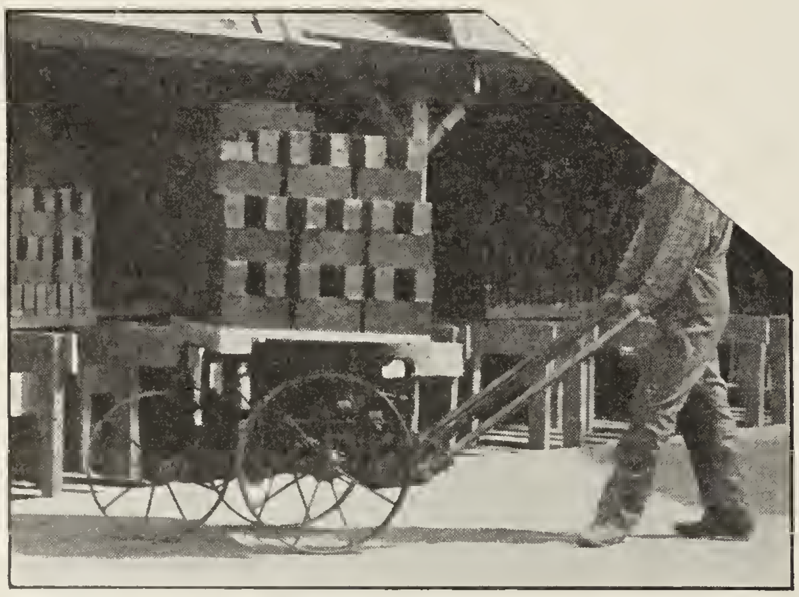
It is almost an impossibility to buy more, and only at prohibitive prices. Treat it with

Rino Lubricant

which will prevent rust and deterioration. The Rino soaks into the spaces between the strands, protects the metal from dirt and water and serves as a lubricating cushion between the wire strands and any friction.

The Ohio Filler & Shield Co.
Columbus, Ohio

Cut Your Labor in Half



With the Drymore System your labor expense is cut in half because

ONE MAN TRUCKS YOUR OUTPUT

from the cutter to the drying shed. The brick are better in quality and appearance because

YOUR BRICK ARE NOT REHANDLED

individually after being placed upon the pallet at the cutter.

NO RAILS; NO TRANSFER CARS; NO TURNTABLES

There are four Drymore Systems—all worth investigation.

Drymore—
FOR LESS

DRYMORE SYSTEM **Galion, Ohio**

last July. All of the men formerly employed are back at work and many new ones added to the force. The plant is expected to operate as long as weather conditions will permit.

The Chicago (Ill.) Fire Brick Co. has acquired from the Chicago Tile & Trust Co. a tract of land comprising about thirty-three acres at the northeast corner of State and Ninety-first streets, Chicago. The consideration is withheld. This firm has five plants in various parts of the city, and while it is said to have no definite plans regarding the property just obtained, it is thought that this tract of land may be used as a material yard. Adjoining the newly acquired property are the rights of way of the Western Indiana and the Rock Island railroads.

A total loss of seven drying sheds, the blacksmith shop, and the engine room of the Tierman brickyard at Macomb, Ill., was suffered recently when fire broke out in this plant. Two men were painting a pipe line with asphalt road oil to prevent rusting, when the mishap occurred which caused the destruction of the plant. A can of oil which was being heated upon a stove became too hot, exploded, and caught fire. The flames scattered in all directions and soon the plant was a mass of flames. The loss is estimated at $8,000 to $10,000 and no insurance was carried.

Indiana

While the debris of the plant of the Woodburn (Ind.) Brick & Tile Co., which was destroyed by fire recently, is being removed, plans for the erection of a new building are under consideration. The erection of the new building will probably be started immediately and new machinery will be installed during the winter months.

The Brick Contractors' Association of Indiana, a newly organized concern, has filed incorporation papers with the secretary of state at Indianapolis. The purpose of the new association is to improve conditions and advance the interests of all persons connected with the brick construction business. The incorporators are Walter W. Wise, Ballard B. Perry, John G. Karstedt, Edward Resener and James Hodgson.

"Taking into consideration the general price situation at this time, there is every reason why persons contemplating building should go to work at once instead of deferring plans in the vague hope of lower prices for building materials," said H. H. Potter, Jr., sales manager of the Clay Products Co., of Indianapolis, in discussing the building situation. "On a comparative basis building is about the cheapest thing a man can engage in at this time. The buying power of a dollar is more in most building materials than it is in other commodities, such as food, for example."

The Loogootee (Ind.) Face Brick & Tile Co. has been sold to R. E. Boyl and associates, who own and operate the Iroquois Coal Co., at Cannelburg, Ind. The new owners will use the plant exclusively for the manufacture of fire brick. The clay for the manufacture of the brick will come from Cannelburg, where there is an eleven-foot vein in the coal company's mine. The vein of tested fire clay is overlaid with a strata of about thirty inches of coal, which will be saved when the fire clay is removed. Gustave M. Risacher, of Loogootee, will be the manager of the plant.

Kansas

The Lawrence (Kan.) Brick & Tile Co. has been forced by the impossibility of obtaining coal to cease operations. Members of the company stated that they do not know when operations can be started again because they have no assurance of any material improvement in the fuel situation.

Kentucky

Walter Corneilson, proprietor of a pottery and brick plant at Bybee, Madison County, Ky., has enjoyed a brisk season in all kinds of jugs and open jars. The retail dealers in the towns of that part of the state have been glad to get his products and the demand from the farmers' wives and the housewives of the towns for containers in which to put up their winter's eggs, vegetables and preserves has been heavy. Mr. Corneilson is operating a small plant that was established many years ago.

A particularly bright spot in the clay products trade in Louisville is the plant of the Louisville (Ky.) Pottery Co. Here is a concern which is approaching the end of one of its busiest seasons, which has plenty of coal assured for the winter's run, sufficient labor and prospects for another big year. All the open jars and jugs that the Louisville Pottery Co. was able to make in the past season was disposed of readily, and the rest of the winter will be spent by the company in forced operations to accumulate as big a stock of pottery as possible by the opening of spring. There is every indication, K. P. Snyder stated, that the dealers in these lines, will stock early next year, in view of the big demand that they have had during the year past, and the Louisville Pottery Co. will do its best to be ready for them.

Louisville brick men and the rest of the building fraternity are sitting steady in the boat waiting for the business they feel is bound to develop almost any minute. They point to the indisputable fact that the general retail business of the city is by far the best in its history. *Brick and Clay Record's* representative a few days ago talked to the head of one of the second rate men's clothing houses. This merchant rubbed his hands and said that one more fall like this one has been and he will be ready to retire and let someone else take the store. "I never dreamed that Louisville could give us the business we have been getting," he said. The leading stores have doubled and tripled their business records of previous years. With these profits being made, the men in the building lines feel that it cannot possibly be more than a short time until the distribution will reach them.

The Louisville Fire Brick Co. has applied to the federal authorities for relief in the way of a coal supply. The plant at Louisville has been practically shut down because of inability to buy coal anywhere. Efforts were made by the company months ago, when it was foreseen that its coal contract might be difficult to renew, to place a contract for its supply. Every effort failed. Now the company is in much the same position as its customers, many of whom have found it impossible to obtain fire clay products. In view of the fact, however, that the Louisville company is operating on government contracts, on contracts for fire brick to be shipped to France and on contracts with concerns which are engaged in war order operations, there is no doubt that preferential treatment in the way of coal will be accorded it, altho the appeal to federal authorities is somewhat of a time consumer.

When the average Central Southern brick and clay products manufacturer says "coal" these days there is a plaintive note in his voice. There is nothing that is the least bit funny about the fuel situation. On the top of

"Over the Top"

Powerful, rugged and dependable, Duplex 4-Wheel Drive Trucks are going "over the top" of the first line trenches in the transportation world—attacking difficult haulage problems—whipping delivery methods into a state of high efficiency.

Duplex trucks are built especially for contractors, brick manufacturers, pit and quarry operators; and are giving never-faltering, all-year-'round service. Write for our booklet of special interest to contractors, road builders and gravel haulers. Our catalog and the heavy haulers' magazine, "Duplex Doings," will be sent you upon request. Address all communications to Dept. 128.

Duplex Truck Company
LANSING - - MICHIGAN

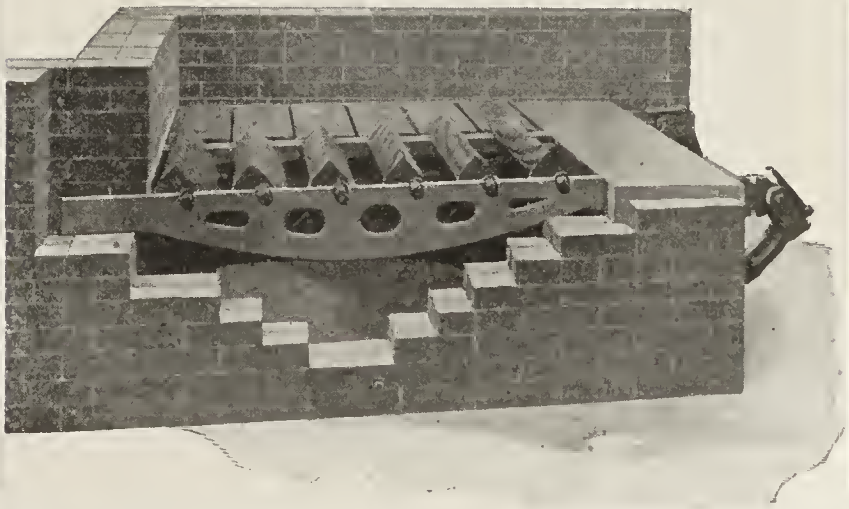
We Guarantee That You Will Save 10% of Your Coal Bill

CYCLONE BOILER GRATES

ordinarily save from 20% to 30% but as a lower limit we guarantee unconditionally—a 10% saving.

Ask for our plan for a 90-day trial.

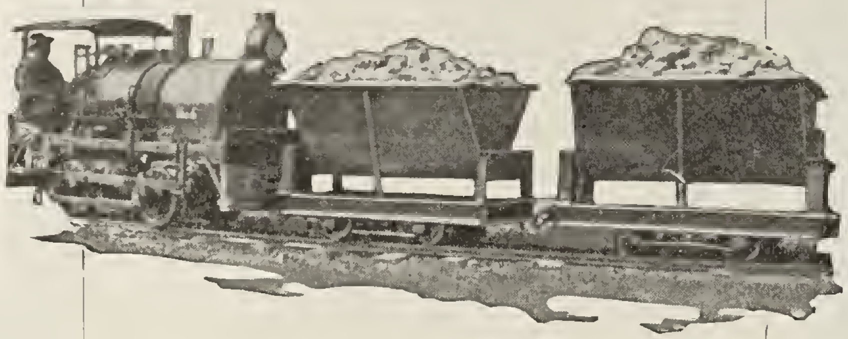
Cyclone Grate Bar Company
Buffalo, N. Y.



The Hard Pulling, Low Cost

Bell Steam Locomotive

Requires no licensed engineer as it is simple and easy to operate, and it burns a low-priced kerosene oil.



Your efforts will be reduced, your haulage problem will be simplified, your labor requirements lessened—all at a lower operating cost. If you do not understand thoroly, ask us for explanation. Now.

Bell Locomotive Works, Inc.
30 Church Street New York

You can get a higher price for your brick if you guarantee it will be

Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H.—the **dependable brand.**

Write for circular and prices.

The Roessler & Hasslacher Chemical Company
100 William St. New York

Chicago, Ill. St. Louis, Mo. Philadelphia, Pa.
Cincinnati, O. Kansas City, Mo. Boston, Mass.
Cleveland, O. San Francisco, Cal. New Orleans, La.

We carry a complete line of high grade chemicals for the clay industry

the scarcity of coal has come the increase of 45 cents on the ton allowed by the fuel administration of the national government. This jumped Western Kentucky mine-run coal from $1.95 to $2.40, f. o. b. the mines, and, apparently the coal operators knew the advance was coming. Several of the brick manufacturers are reported to have used the long-distance telephone as soon as they learned of the advance authorized and to have sought out mines away back in the hills, thinking that they could get some orders in, or maybe a contract placed, before the operator learned of the advance. In no case were they successful. The question is not one of price, however, it is a matter of getting coal on any kind of a basis and the federal regulation of the price feature has made it impossible for the consumer to pay a premium which will move the producer to give him the coal. There is practically no coal for sale in the Louisville market, in which all the Kentucky fields are represented, and operators are booked ahead for six weeks to two months and declining orders daily.

Maine

The kiln fires on the brick plant of the Horace Purington & Co., at Skowhegan, Me., have been allowed to go out and no more brick will be manufactured this season. The season's output numbered about 700,000, of which over 200,000 were used in the construction of the new Skowhegan post office building. According to F. A. Meader, the season has been decidedly poor for the manufacture of brick on account of the excessively wet weather. It is due to this cause that over 60,000 brick were spoiled in the manufacturing process during the year.

Maryland

When the government took hold of thirty-five thousand acres of land in Hartford County, Md., for use as a proving ground, and decided to build all sorts of brick buildings thereon, it gave a smart boost to the Maryland brick business. In one of the largest brick concerns in Baltimore, two days after the announcement, the general manager was fingering a pile of government contracts which will keep his firm busy tor some months. The Frank A. Furst Construction Company and the Maryland Dredging Company secured the contract, and operations are already under way. This, naturally, has put heart into the local industry, but aside from this there has been nothing especially encouraging to report. The building activities have not increased to any appreciable degree. The builders are not putting up many new houses, altho the city is very nearly built up to its population. This leads keen observers to believe that in the spring there is going to be a big building boom; but others point out that this is unfounded. They base their reasons for this on the fact that the new houses have very largely appealed to newly married couples, the percentage of which will shrink to a very small figure because of the drafts and enlistments in the regular branches of the service.

Michigan

The former Kruse brick plant, located at Volinia, Mich., has been sold to a party who, it is said, will convert the property into a poultry farm. One of the best clay deposits for the manufacture of brick is said to be located on this property. The piece of land, however, is so far distant from Decatur, where the nearest railroad is located, that brickmaking is unprofitable.

Missouri

Because of the shortage of coal, the Fulton (Mo.) Fire Brick Co.'s plant was closed for an indefinite period on October 23.

H. H. Crowell, sales manager of the Hydraulic-Press Brick Co., reports that the business in Kansas City and the surrounding territory has been extremely good during the past month and that the company has had a large volume of business. The plants, he reports, are operating as closely to capacity as possible under the present coal situation.

It is stated that many of the brick manufacturers in the state of Kansas, who maintain sales offices at Kansas City, have been forced to lower their productions. These plants are engaged principally in the manufacture of paving brick and nearly all have contracts on hand for large enough supplies to keep them busy until well in the 1918 season. A number of plants have been operating only as close to capacity as they can on the supply of fuel that they are able to secure each week and month.

Building during the months of September and October, at Kansas City, Mo., was more than 60 per cent. below the same months a year ago. However, the brick dealers declare that they have had nearly all the business that they have been able to handle. Another increase in the price of brick is expected to go into effect some time during the present month, as a result of the rapidly increasing coal prices and the fuel shortage, the latter of which has struck a severe blow to the brick manufacturers in this territory. The price for common brick reached a high mark last month when some dealers asked as high as $12 per thousand. According to opinions in the trade the price during the months of November and December will more than likely exceed that figure, regardless of the fact that the building permits are not up to the standard.

Nevada

A large deposit of clay suitable for the manufacture of brick has been found near Ely, Nevada. It is said that the clay has been thoroly tested and found to be of good quality. It is expected that a brick plant will be built upon this site by next spring.

W. L. Marks, of Manhattan, Nev., and W. H. Bond, of Beatty, Nev., are preparing to market kaolin from the deposit owned by them seven miles east of Beatty. A bid of $9.50 a ton has been accepted and work will be begun on the deposit at once.

New Jersey

The Matawan (N. J.) Brick Co. has been capitalized at $25,000. The representative of the new concern is C. E. Robinson, 17 Battery place.

Merhoff Brick Co.'s plant, at Little Ferry, N. J., has not operated thruout the season to capacity, it is said, because of the difficulty of securing sufficient labor. Much improvement in the situation has been felt lately, however, and the past month has seen about the usual activity. The company's output is commonly about 6,000,000 to 10,000,000. This year the production will be somewhat less.

All the Hackensack River yards are closing the season with small burnings. Not one has laid up the arches full, with the exception of the Hackensack Brick Co., which has done a good business all season and has sufficient orders ahead now to absorb all the brick in its kilns.

When You Buy Cars Again

BUY YOUNGSTOWN

They are built stout and strong, of structural steel and plate that defies the rough treatment of pit and incline. Ask for our catalog, or figures on your specifications.

The Youngstown Steel Car Co.
Youngstown, Ohio

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.
Cleveland, Ohio

Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

George M. Brewster, general manager of the plant, is a prominent contractor and much of the company's output is upon his own jobs. The company will strip further clay deposits and probably make some changes in their plant before next season opens.

The embargo on brick shipments into Trenton, N. J., which has caused much trouble recently, was raised sufficiently last week to enable the resumption of work upon various jobs which have suffered delay because brick did not arrive. Those who were supplied with brick from the local yards were able to continue the work because of the success of motor delivery, and even horse-drawn cart delivery, in coping with the difficulty. Brick coming from a distance have been sidetracked to await the relief of congestion upon the transportation lines entering the city.

Building conditions in and about Paterson, N. J., have not improved materially during the month, and the season is so far advanced now that very little more constructional work is looked for this year. Here and there a small contract is reported, but the large ones are evidently in the future. The erection of cantonment buildings of sufficient size to accommodate 30,000 soldiers near Paterson has absorbed all the labor which might otherwise have been employed in building and has likewise absorbed much of the material which is needed for construction. Permits were the smallest this month they have been in years, and nothing in sight indicates any change for the better until winter is over. It is useless to undertake to explain away the situation. No investor is putting up money for building operations. That is the whole story. With Liberty Loan agitations, shipping difficulties, and various other retarding influences which arise from the fact that America is at war, holding back building operations, it is needless to assume that much change can be expected until the men with money are better satisfied that the conditions of the future will not tend toward the destruction of their investments. The city is insufficiently housed, and when all the mills in the city are running, the dearth of housing facilities will be much more apparent than it is now. The opportunity for the investor is here, but apparently he doesn't intend to take advantage of it.

New York

Only one more kiln remains to be fired on each of the plants of the Hayden brick yard and the Davidson brick plant in Newburg, N. Y., before the season is wound up.

The plants of the Duffney Brick Co., New England Brick Co., and Champlain Brick Co., all of Mechanicsville, N. Y., were shut down for a half hour recently so that the men could listen to some very interesting talks on national subjects made by various prominent men. These men emphasized, in their speeches, the need of the government to obtain funds to wage the war againt Germany, and the necessity for supporting the second Liberty Loan.

Building activity in Binghamton, N. Y., during October, showed an increase over previous months, but in Syracuse, N. Y., and Auburn, N. Y., there was a slight falling off. Binghamton permits were for buildings to cost $243,870, compared with $130,928 in October, 1916. In Syracuse, the October permits aggregated $115,439, a decrease from the preceding month. However there was a spurt at the latter end of the month which is still going ahead strong so that November promises to go far ahead. In Auburn the aggregate

The Analogy Between Fire and Water, Scum and Rollin's Barium Carbonate

IS PERFECT

Rollin's Barium Carbonate eliminates and smothers the scum just as effectively as fire is smothered by water.

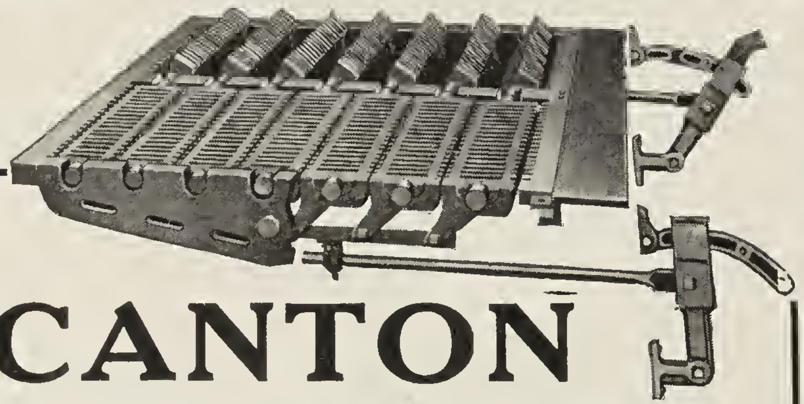
Add "Rollin's" at the pug mill feeder; it renders insoluble and harmless the scum-producing sulphates that are in your clay.

If you are bothered with scum on your ware, either in the drying or burning process, or after it is layed up in the wall—you particularly should use

Rollin's Barium Carbonate

Rollin Chemical Company
Inc.
Charleston, West Virginia

General Sales Agents
National Aniline & Chemical Company
244 Madison Ave., New York City



CANTON
Shaking and Dumping
GRATES

Not a TRIAL Nor An EXPERIMENT

When it comes to saving fuel, keeping the fires clean, removing clinkers and ashes easily, these grates have proved their practical utility for many years.

The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

When you want Grates—don't forget to investigate the merits of the Canton Boiler Grate. Write for catalog.

THE CANTON GRATE CO.
1706 Woodland Ave.
CANTON - - - - OHIO

cost of buildings for which permits were issued was $5,625, compared with $29,250 for October, 1916.

Ohio

The Lima (Ohio) Hollow Brick Co. just recently started the manufacture of brick. This company, of which O. D. Haskell is superintendent, is now installing a producer gas system of burning on its eight kilns.

The Cincinnati (Ohio) Clay Products Co. reports that while the demand is far from being stagnant, business is not very active. There has been very fair demand for sewer pipe, linings, and fire brick. Mr. Kopp of this company stated that the labor question has been one of serious proportion.

The Ironclay Brick Co., which operates a large plant at Shawnee, Ohio, has turned its attention to the manufacture of fire brick and is now shipping quite a quantity for government work. Cars for that class of shipments are plentiful.

The Duro Brick Manufacturing Co., of Akron, Ohio, has been incorporated with a capital of $200,000 to manufacture brick and other clay products. The incorporators are: Odo A. Alspaugh, Nelson J. Long, Fred W. Jones, Carl H. Whitman and Tunis W. Kimber.

It is stated that the newly incorporated Central Ohio Brick Co., at Columbus, Ohio, which is capitalized at $100,000, is a reorganization of the National Paving Brick Co., of South Zanesville, Ohio. James Ford, of Zanesville, is one of the incorporators of the new concern.

The Cincinnati (Ohio) Brick Co. has closed its plant and will not resume operations until spring. Transportation, labor, and fuel difficulties, plus a decided decrease in the demand for brick, have been instrumental in bringing about this action.

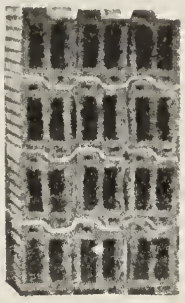
Building in Cincinnati, Ohio, is, in common with the situation thruout the country quiet. Prematurely cold weather has put the damper on some of the work already under way and has tended to delay the launching of the few new projects under contemplation. Municipal and industrial building constitutes the greater part of the work.

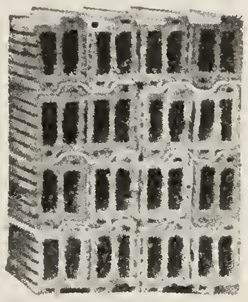
Officials of Ohio announce that the erection of the new state penitentiary on a site near London Ohio, will be started early in the spring. Architects Richards, McCarty and Bulford have been commissioned to draw the plans for the structures, which will cost approximately $3,000,000 to $3,500,000.

The annual meeting of the Ohio Builders' Exchanges was held at Akron, Ohio, recently and many brick manufacturers and jobbers attended. The sessions were taken up in a discussion of present building conditions and plans for the future, in order to meet war time problems. W. L. Watson, of Columbus, a brick dealer, is an official of the organization.

Directors of the Columbus Exposition Co., of Columbus, Ohio, who propose to erect a large exposition hall at Rich and Wall streets, in conjunction with an interurban station, announce that plans and specifications will be revised and the work will be advertised some time before Christmas. The cost will be in the neighborhood of $500,000.

Common brick in Ohio are still in good demand, but there is a considerable falling off in the demand for face brick. Factory building, especially additions to present plants, is rather active. Mill construction is quite gen-





Is Your Territory "Loxall" Licensed?
Better write us and find out.

"LOXALL"

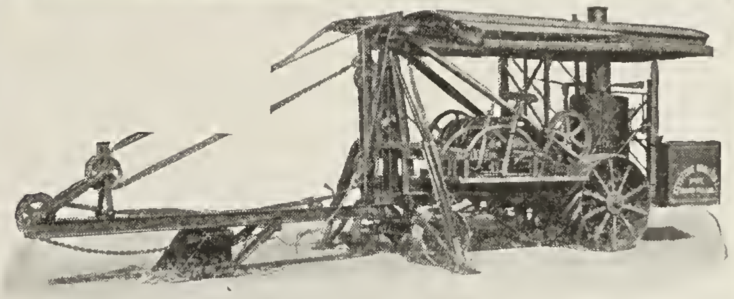
is **your** idea of a **good** proposition.

It is easy to make, easy to dry, easy to burn—and it is easy to sell.

Every state is to be licensed—Let's talk it over.

J. E. Exner
602 Lincoln Street
Coffeyville, Kan.

Loxall is patented in the U.S.A. and Canada



KEYSTONE

PORTABILITY

THE KEYSTONE EXCAVATOR (MODEL 3) is a light traction shovel. It weighs ten tons, wheel-base, about ten feet. Rear wheels 55-inch in diameter with 16-inch tires. Front wheels 30 inches in diameter with 10-inch tires. It has two traction speeds and will go anywhere on its own power where you could take a loaded dump wagon.

SKIMMER BUCKET ½-YARD CAPACITY. Machine will load 250 to 500 cubic yards in ten hours, operated by two men. Replaces 25 to 50 hand shovellers, has powerful crowding thrust and will dig toughest fire clay. We will furnish names of brick manufacturers, cement plants, etc., using Keystone Shovels in pits under all conditions.

You save in first cost, up-keep, repair expense and moving cost. Get from one set-up to another in quick time. No planking necessary if ground is dry and solid.

Your Engineers agree that it is good business to install two light machines in place of one heavy unit. The explanation is **PORTABILITY!**

All operations illustrated in catalog, which will be sent on request.

KEYSTONE DRILLER CO., Beaver Falls, Pa
170 Broadway, New York City Carthage, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

Kissel ALL-YEAR Cab
Gives drivers full protection in Winter
Increased results for truck owners

"It will keep your trucks in operation all winter"

NO MORE costly lay-ups on account of the weather. By giving your truck drivers full protection, the **ALL-YEAR Cab** increases their efficiency, discourages speeding, diminishes accidents and insures proper handling of your trucks.

By adding the winter attachments, the **ALL-YEAR Cab** is warm, dry, closed and proof against the most severe weather. In summer, it is quickly changed into a cool, open housing.

KISSEL TRUCKS

Five new sizes—a truck for every purpose.

Dependable performance is **built-in** to every Kissel truck. The perfected worm-drive rear axle, superior front axle, reliable Kissel-built power-plant, sturdy double external brakes, and special heat-treated frame, are a combination of truck essentials found only in Kissel Trucks. That is why Kissel Truck owners in the brick and clay industry are getting efficiency in performance and economy in time and upkeep.

See your Kissel dealer today or write us for literature on the new Kissel Trucks and the ALL-YEAR Cab.

Kissel Motor Car Company
Hartford, Wisconsin, U. S. A.

erally used in the construction of these plants and additions.

The labor market in Columbus and central Ohio is again back to more normal conditions since the practical completion of the cantonment at Chillicothe. During the period of its construction upwards of 10,000 laborers, many of whom were normally used in building lines, were employed on the cantonment. As a result there was quite a dearth of labor, and building suffered as a consequence.

Nothing is likely to impair permanently, at least, real estate and building values in Columbus, Ohio. There is no reason for expecting an era of depression in those lines of activity. So contractors, builders and material men generally are viewing the situation in an optimistic light and preparations are being made for some building next season. It is believed that home building will continue good and that there also will be a demand for apartments and flats.

The Ohio State Brick and Stone Co., of Columbus, Ohio, which recently took over the plant of the New Lexington Brick Co., is preparing to operate the plant in the manufacture of fire brick. Additional machinery is being installed and it is expected to have the plant in operation by the middle of November. The company operates a plant at Shawnee and reports a good demand for fire brick. C. B. Young is at the head of the concern.

One of the most important events in brick circles in Ohio was the meeting of Ohio Fuel Administrator Johnson, Federal Administrator Garfield, and local coal committees at Columbus recently, when the Ohio coal situation was discussed at length. Steps will be taken to divert a portion of the product of Ohio and West Virginia mines for domestic users and factories in Ohio. Many Ohio brick plants have been extremely short of coal and in some instances have been compelled to close down for want of fuel.

The plant of the Athens (Ohio) Brick Co. has been closed because of lack of coal. The plant is located in the heart of the Hocking Valley mining district and some of the largest mines of the field are within ten miles, but nevertheless there is not sufficient coal to operate the kilns. When the plant suspended, 125 men were thrown out of employment. It is believed that the suspension will be only temporary as steps have been taken to secure a coal supply from the federal and state fuel administrators.

The second fire within a week at the National Paving Brick Co., of South Zanesville, Ohio, was discovered one evening recently in the office building of the plant. The fire, however, was extinguished before it could do much damage. Coal falling from an open grate is supposed to have ignited the floor, which caused a general conflagration in the office. The South Zanesville fire engine was called, but it was necessary to form a bucket brigade before the fire was extinguished. The first fire at this plant caused a loss of $2,000.

The Ohio Highway Commission has awarded the contract for the paving of a section of the Bellevue-Norwalk road in Huron County with monolithic brick to Chris Stoltz, of Bellevue, at $40,744.55; a section of the Youngstown-Lowellville road in Mahoning County with brick to the Smith Construction Co., of Youngstown, at $53,791.80; a section of the Cleveland-Massillon road in Summitt County to W. E. Burke & Sons, Akron, at $57,853.60, and the resurfacing of a section of the Steubenville-Cambridge road in Jefferson County to Andrew MacDonald, Steubenville, at $65,830.

Transportation facilities from Ohio factories are gradually growing worse, both thru the tightening of the general car supply and because of orders from federal officials, diverting cars into other channels. The order has recently been issued that open cars can not be used for the transportation of brick, excepting on government or war work and this is cutting down shipping facilities to a large degree. Many Ohio factories have had only a few cars in the past fortnight and prospects are for a still shorter supply. This condition will naturally lead to the closing down of Ohio brick plants unless it is relieved.

Pennsylvania

The oven brick at the abandoned coke works at Broad Ford, Pa., have been purchased by the Soisson Fire Brick Co., of Connellsville, Pa., and are being removed and ground for re-use at the Davidson and Volcano plants of that company.

It is stated that a number of financial men of Wilkes-Barre, Pa., have negotiations under way for the organization of a new brick plant at Saylorsburg, Pa. Options have been taken on a number of tracts of land in that vicinity which contain brick clay and also on a piece of land along the railroad where the plant is expected to be located. It is understood that the plans are under way, and it is believed that the project will be started before next spring.

South Carolina

The Sumter (S. C.) Brick Works has recently completed the installation of a producer gas system of burning at its plant.

Tennessee

The Fulcher Brick Co., of Nashville, Tenn., has received the brick contract for the new campus buildings to be erected at the Southwestern University, at Clarksville, Tenn. This same company reports a very good demand for its product thruout the whole state.

Texas

The Elgin Brick & Tile Co., of San Antonio, Texas, has been capitalized at $100,000. The incorporators are: S. F. Kirksey and J. D. Guinn, of San Antonio, and L. T. Adams, of Jack County. The new concern will erect its factory in Bastrop County and will maintain its headquarters in San Antonio.

* * *

Brick at Columbus Building Show

The Columbus (Ohio) Brick Club is taking active steps to see that the best of all building materials will be represented at the coming building show to be conducted by the Builders and Traders Exchange, as well as the Real Estate Board of Columbus, and to be held in that city from January 21 to 30, 1918.

The manager of the show reports that plans for its success are progressing very nicely and that the prospects are for an exposition double the size ordinarily planned. The promoters started with the idea of using two of the Ohio state fair buildings but before the plans were really announced the third building was engaged in which to display machinery and equipment of all kinds used in building construction and road work.

"The pulleys with Cork Inserts installed by you 14 years ago have been running steadily ever since and continue giving satisfaction."

NOW—Will you be convinced of the economy of using

Cork-Insert Pulleys

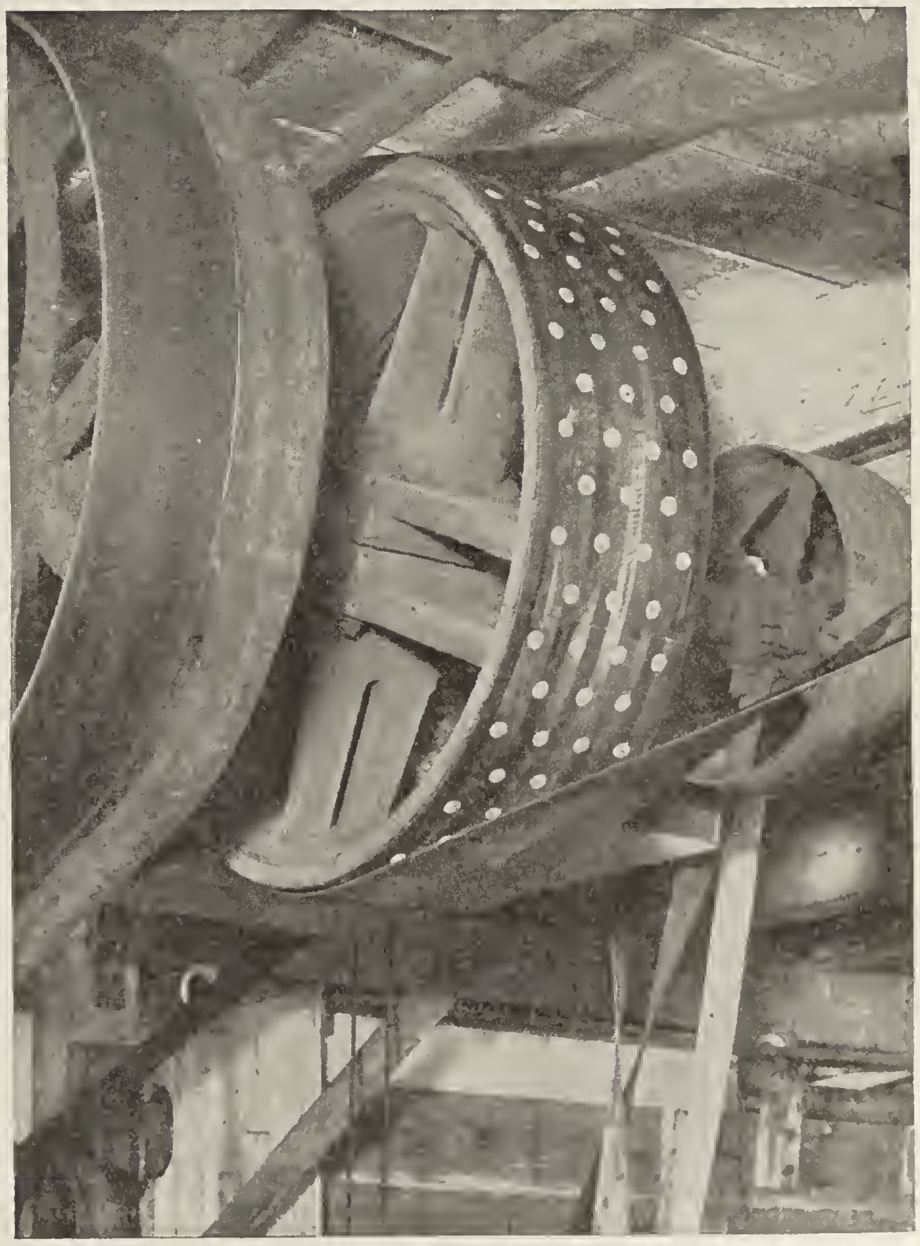
The quotation above is from a letter written us by a user of our product—the illustration below shows the installation.

Look at the rust on the face of the pulley at the right and on the spokes of the one at the left. Also look at the Cork Inserts on our pulley—just the same as they were 14 years ago and still good for many years! You can judge conditions in this plant from the picture. Excessive dampness prevails at all times.

If you realize the importance of installing pulleys that never allow a belt to slip—that really save power—that keep your machines up to speed—that increase your output—you will no longer hesitate to investigate what the Cork Insert pulley will do for you.

You won't obligate yourself if you ask for details.

The Cork Insert Company
168 Federal St. Boston, Mass.



A Problem—

HOW MANY MEN WILL ONE REPLACE?

ELECTROMOBILE
TRADE MARK
INDUSTRIAL TRUCK

One Electromobile hauls 3,000 pounds of brick from kiln to car at the rate of 5 miles per hour—a wheelbarrow and man will convey 300 pounds at 3 miles per hour. How many men will one Electromobile replace?

The problem is more complicated than that—Length of haul, time of loading and unloading and other factors have to be considered, but hundreds of brick manufacturers are finding that an Electromobile Electrically Driven Truck will replace from three to ten men and at the same time it will speed up the work and keep going more steadily—day and night if you like.

Better investigate what

KOPPEL

can do for you in the way of better transportation equipment

Not only in the way of Electromobiles but in Clay and Dryer Cars, Portable Track, Steel Rails, Steel Ties, Frogs, Switches, Turntables, Dump Cars of all kinds, in fact everything in the way of transportation equipment.

Write for catalogs and plans

PLANT:
KOPPEL,
PA.

ORENSTEIN-ARTHUR KOPPEL CO.

Branches all over the World

Sales Offices
New York
Chicago
Pittsburgh

Pacific Coast Representatives: Koppel Sales Co., Inc., San Francisco.

POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

Outlaw Potters Revolt Against the Referendum Decision—Plan Formation of New Union to Force Demands

The troubles of the manufacturing potters were multiplied by the action of four branches of pottery labor, namely, kiln placers, sagger makers, jiggermen, and dippers, in not returning to work October 22, as they were ordered to do by the officials of the National Brotherhood of Operative Potters. This command to the workers was forwarded following the loss of a necessary two-thirds vote of the operative potters to reject the offer of the manufacturers, which insured the employes an increase in wages over the 1915 wage scale, varying from 10 to 32½ per cent.

The entire proposition was up to the referendum vote of the trade, the officials of the National Brotherhood of Operative Potters having no voice in the matter. However, the four local unions announced their disapproval of the result of the referendum by refusing to return to work October 22, as commanded by the officials of the brotherhood.

Then followed a series of meetings of each disgruntled local union, and a mass meeting of all those opposed to the acceptance of the offer of the manufacturers. At the mass meeting held in East Liverpool, Ohio, on October 22 and 23, plans were laid to form a new independent pottery workers labor organization.

Another step taken at one of these mass meetings was the selection of a "committee on law," the purpose of which is to consult attorneys to ascertain if it is possible for one or more local unions affiliated with the National Brotherhood of Operative Potters to obtain its share of the money held in the treasury of the brotherhood, which amounts, so it is said, to over $700,000, and their equity in certain real estate owned by the brotherhood.

In the meantime, other branches of the pottery trade had resumed work. Decorators, casters, pressers, warehousemen, decorating kiln firemen, packers, and kiln drawers obeyed the orders of the brotherhood and again started work. No sooner had this been accomplished than some of those who were at work were opportuned to join the ranks of those seeking to form an independent organization

While this strife continued in the ranks of labor the manufacturers did not know which way to turn. With jiggermen out, no flat or hollow ware was available for the kiln placers. The casters and pressers are the only brances being employed in the clay shops. Decorators, of course, worked up what ware was available from the glost kilns, and this ware was rushed thru to the packing and shipping departments. With the dippers loafing there was no ware for the glost kilns. The packers employed in the East Liverpool district refused to join the "revolution" and abided by the decision of the majority vote. Some few manufacturers refused to start their engines while the four branches of the trade were on strike, and not a few were a unit in the expression that the situation is more "up in the air" than ever before.

Stocks of white ware in all potteries are exceedingly

SAY IT WITH
BRICK AND CLAY RECORD

short. Unless the four disgruntled union branches return to work very soon, the manufacturers will be compelled to hang the "closed" sign on their doors. Their kilns will be drawn, their white ware worked up into decorated orders, there will be no ware in the green state to fill the bisque kilns, and nothing to pack.

There is apparent evidence that friction exists within the ranks of the National Brotherhood of Operative Potters, especially in the East Liverpool, Ohio, district. Pottery workers in the Wheeling, Grafton, and Clarksburg, W. Va., district, those at Sebring, Ohio, and at Trenton, N. J., are far more contented than those in the East Liverpool section. The kiln men in East Liverpool have, upon occasions in the past made efforts to be the leaders in the trade. It is even reported that not many months ago this branch of the trade threatened to withdraw from the National Brotherhood of Operative Potters.

Crockery jobbers and department store buyers thruout the country in the meantime have been hounding the manufacturers for merchandise. Order files in all potteries are simply overcrowded, because the manufacturers have been unable to obtain possible production. It is conceded that only a fair amount of new business is being received by the pottery manufacturers now, but the volume of unfilled orders is sufficient to keep potteries working to capacity for months to come—if the employes would remain loyal and work steady. This, however, does not appear to be possible.

⁂

MISCELLANEOUS NOTES OF POTTERS AND POTTERIES

Harold S. Maddock, vice-president of the Thomas Maddock's Sons Pottery Co., Trenton, N. J., has been granted an extension of his exemption from the operation of the draft until January 2, to enable him to adjust his business. A. M. Maddock, president of the company, devoted his time entirely to the government during the summer and has just recently returned to take up the work of the company again. Harold S. Maddock was granted an extension of exemption to November 1 and that proving insufficient, another extension was granted to the first of the new year.

The five hundred semi-porcelain workers who walked out of the Trenton, N. J., pottery plants on strike started to work Monday, October 22, at the Cook, Mercer, International, and Anchor potteries. A good increase was given them altho the 25 per cent. raise demanded was not secured. During the time the men were out kiln fires were kept lighted in all of the plants of the potteries affected by the trouble and it was therefore with but little trouble that the men reassumed their old positions.

The Washington (N. J.) Porcelain Co. was recently incorporated with a capital of $100,000 and has laid plans for the erection of a new plant to consist of three buildings, the main structure of which will be about 45x450 feet. Herbert Sinclair and Frank Gardener, of Trenton, and Harold Humphreys, Washington, are the officers of this company.

The Trenton (N. J.) Potteries Co. has declared the usual quarterly dividend of 1½ per cent. and an extra dividend of ½ of 1 per cent. on its non-cumulative preferred stock, payable October 25, to stock of record October 18.

The Pottery Equipment Co., Trenton, N. J., recently filed a certificate of incorporation, placing its capital stock at $10,000. Rudolph Gaertner, of New York, is the largest stockholder of this company.

"Full Speed Ahead"
Says Uncle Sam
"Aye, aye, sir"
replies "On-the-Job" GANDY

"SPEED is my middle name.

"You, Mr. Producer, see that your power is top notch and steady—that your shafting and pulleys are true.

"You can then put your faith in me for full production and uniform quality—war-time results Uncle Sam wants.

"As to credentials, I can bring you a thirty-seven year accumulation from every representative industry in almost every country on the globe.

"They'll tell you I'm the sturdy, long-lived power and material belt that's built to get *all the pull from the pulley.*

"Don't delay—send for me now through your supply house or order direct.

"My painted green edge and well known trade mark will tell you at a glance that I'm the genuine *'On-the-Job' Gandy* original stitched cotton duck belt."

*Write for prices
and samples*

The Gandy Belting Co.
732 West Pratt Street
Baltimore, Md.
New York Branch: 36 Warren St.

The "B-G"
Portable Belt Conveyor
Eliminates Your Worst Labor Problem

With this light, practical conveyor you can reduce your handling charges at many points. The conveyor can be moved easily on its own trucks or on an overhead track, in a shed or in the open.

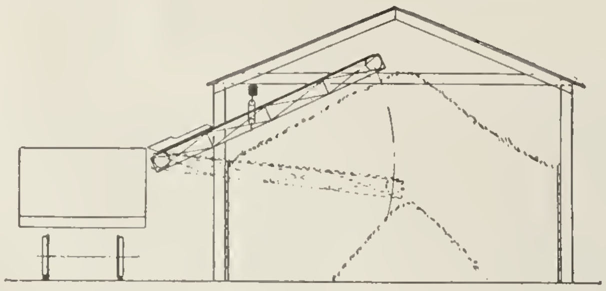
It handles **coal, clay** and **brick.** It will operate level or on an incline. It eliminates the wheel barrow and all rehandling and thereby **cuts the labor costs in two.**

Driven by electric motor within the frame. Eighteen-inch belt. Made in 12, 15, 20 and 25 foot standard lengths or in special lengths to suit conditions.

In writing for price, state length of conveyor required and voltage, phase, and cycle of your current.

Barber-Greene Company
Aurora, Illinois

532 Acklin Ave., Toledo, Ohio.
Maurice J. Watson Co., Newtonville, Mass.
Lucke Sales & Engineering Co., Minneapolis, Minn.
Machinery Rental & Sales Co., Kansas City, Mo.
Mussens Limited, Montreal, Canada.



For inside use in any type of shed piling coal or reclaiming clay.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

(*Continued from Page* 860.)

are restrictions upon the freedom of trade and commerce, with a tendency to militate against the small man."

HOW THE SMALLER SHIPPER IS BENEFITED

Under class rates, Western Classification provisions on iron and steel articles rate angles, bands, bars, bridge material, channels, columns, girders, plates, stair work and zees fourth class when in less-than-carloads. Together with bolts, castings, window gratings, pipe and pipe fittings, piling, rivets, and structural steel, these articles may be shipped in mixed carloads at fifth class rates. The advantage of such a rating to a contractor with a small building job is readily apparent. A dealer in agricultural implements has the privilege of ordering a wide variety of stock and enjoying a carload rate upon the entire mixture. The same is true of shippers of many other commodities, including aluminum ware, bakery goods, boiler parts, canned goods, electrical appliances, furniture, glassware, leather goods, house trimmings, machinery, paints and varnishes, petroleum products, and plumber's goods.

The advantages under mixtures allowed in commodity tariffs are still more marked. For example, dry goods are generally rated first class, carloads or less-than-carloads, in the Western Classification. The first class rate from St. Paul to Spokane is $2.50. A carload commodity rate of $1.10 between these points permits shipments with a 30,000-pound minimum to include cotton blankets, buckrum, bunting, calicoes, cambrics, canvas checks, cheviots, corduroy, damask, flannels, ginghams, prints, sheetings, ticking, and several other kinds of cotton piece goods. In the absence of this commodity item, such a shipment would pay $750; the mixed carload rate makes the same movement possible for $330. Similarly, a number of cereal products carry a fifth class carload rating, but no provision for mixtures. The rate is $1.33, with higher charges on the less-than-carload basis. A transcontinental tariff quotes a commodity rate, straight or mixed carloads, of ninety cents. Another item in the same tariff allows a mixture from 83 kinds of hardware under a hardware commodity rate.

These illustrations might be carried on indefinitely, but the examples cited are sufficient to show the possibilities for legitimate reduction in transportation charges. The keen business man familiarizes himself with the classifications and tariffs covering this point effective in the territory in which he works.

Few hard and fast rules as to the shipper's right to mixed carload rates can be laid down. In a case bearing upon mixed shipments of cattle and hogs, the commission declared that "a schedule which fails to provide a rate for a mixture which can be properly handled and transported without damage to destination is unreasonable." Another decision expresses the opinion that, where the transportation characteristics of two commodities are practically the same and the rates when shipped separately identical, the withholding of a mixed carload rate is unreasonable. The justification in these two cases was upon both commercial and transportation grounds. An order directing the continued inclusion of binding twine in an agricultural implement mixture was an acknowledgment of the controlling influence of trade conditions. Mixed carload rates must be free from undue discrimination. Fear that the establishment of such a rate might lead to unjust discrimination against shippers of straight carloads and points of origin from which it would not apply has been grounds for the dismissal of a petition asking for the publication of a mixed carload rate.

* * *

How America Stands Financially

This whole country has just passed thru a remarkable readjustment period, and the ease with which the banks have financed the record payments—estimated at fully $800,000,000—has directed attention to the splendid facilities of the Federal banking system. Never before has such a variety of unusual payments fallen in the period when the half-yearly dividends and disbursements were being made. In addition to the $315,000,000 which had to be provided for the dividend and interest obligations, there was large financing called for by the Liberty Loan installments, the government taxes, the Red Cross subscriptions and the usual engagements by corporations and mercantile houses at the close of the fiscal year. But the banks stood the test well and everything went off smoothly.

No money market was ever as interesting as the market is today. Great Britain, France, Russia, Italy, and other foreign governments have recently been bidding 6 per cent. in order to obtain accommodation in the American market, which is the only source of supply for large borrowers at this time. Every other borrower has to compete with this foreign demand, which has been sufficient to absorb five times the amount of money that American banks have had to lend. Splendidly managed railroad and industrial corporations, which at this season usually find a ready market for 4½ per cent. securities, cannot borrow on these terms this year for the simple reason that borrowers of equal credit are outbidding them as much as 1½ per cent.

This situation has forced strong industrial concerns, whose prosperity is so great as to enable them to earn 100 per cent. to 300 per cent. on their capital stock, to sell short term notes instead of long time bonds. This is the penalty of doing business in a country that is acting as the banker of the world. But the mechanism of the Federal Reserve system has been found equal to the demands of this intricate financing, and under the leadership of the Federal Reserve Board, every worthy borrower has been receiving the accommodation he needs. Fortunately this country is well fortified with an immense gold reserve, more than $1,700,000,000 of foreign gold having been shipped to the United States in the past three years.—From "The L-C Bulletin," published by the Laclede-Christy Clay Products Co.

* * *

Sergeant Earle Writes From Camp Taylor

Sending out an emergency call that he was not receiving *Brick and Clay Record* and requesting that his address be changed to 309 Headquarter Troop, Camp Taylor, Ky., Sergeant George C. Earle, formerly of the Hydraulic-Press Brick Co.'s office at Roseville, Ohio, informs us that "the soldier's life is the life for him."

According to Sergeant Earle, there are several face

Erie Revolving Shovels

"It's this shovel that keeps us going!"

"Even if we were able to get a gang of laborers to do this digging by hand, it would ruin us to try it.

"We are taking shale out from under the old bed—a level that it did not pay to work by hand methods, even at old-time labor prices. We have got 15 years' digging left in this lower level. We are making forty thousand brick a day, steady output.

"The shovel is taking it out much cheaper than our hand labor cost us on the upper bed.

"My son is running the machine, and he has operated every make of shovel that is used in brickyards. He is the strongest Erie Shovel booster you ever saw; he says that the Erie is far and away the fastest machine for brickyard digging, and the most reliable and the easiest to keep up. Over there we hit a big outcrop of flint rock, which is the hardest digging that you can put a shovel in. The Erie went through it without blasting. It was the hardest digging I have ever seen a small shovel get away with."—J. M. Highhouse, Superintendent of the Dunn Brick Company's plant near Erie.

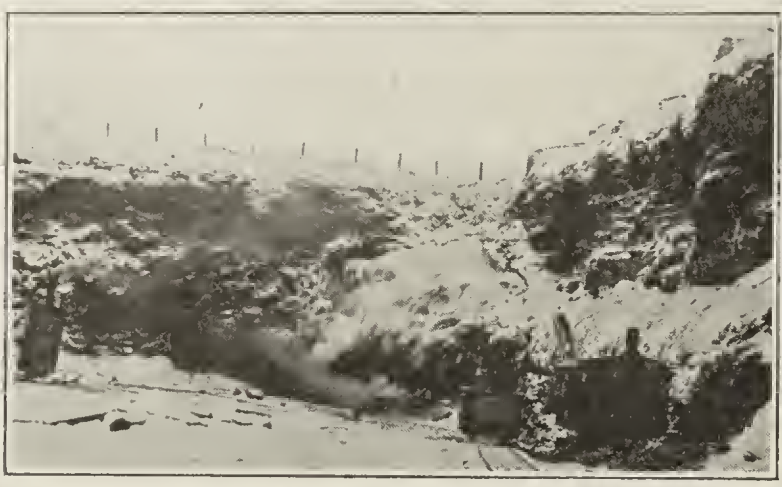
Every owner of an Erie Shovel is ready to tell you this same enthusiastic story. They will tell you that the Erie is not only a faster machine, but more RELIABLE. It is the TROUBLE-PROOF shovel, because it has more strength than other shovels of its size, at every point of wear and strain.

And the Erie's long reach saves move-ups, saves shifting of track, saves spotting of cars—in other words, SAVES MONEY.

Prove these facts for yourself. Find out which is the best revolving shovel on the market.

We would like to send you a copy of our new Bulletin "B."

Ball Engine Co., Erie, Pa.



DU PONT AMERICAN INDUSTRIES

Blasting Helps the Big Shovels

Load Bore Holes
WITH
Red Cross Extra
The Universal Explosive

Red Cross Extra Dynamite is a LOW FREEZING, all-the-year-'round, high efficiency explosive especially recommended.

For Clay Blasting

It is made in all standard strengths from 20 to 60% and guaranteed to be as represented by cartridge markings.

Red Cross Extra Dynamites are as strong, stable and efficient as any other standard explosive.

If no test of Red Cross Extra has been made, make one at once,—it is the least expensive and most efficient explosive.

Tell us what your blasting work is so that we can suggest how to use RED CROSS EXTRA efficiently and economically.

E. I. du Pont de Nemours & Company
Wilmington, Delaware
Powder Makers Since 1802

Du Pont American Industries
E. I. du Pont de Nemours & Co.
Industrial, Agricultural, Sporting and Military Explosives.
Du Pont Fabrikoid Co.
Fabrikoid, Rayntite and Fairfield Rubber Cloth.
The Arlington Works
Ivory PY-RA-LIN and Challenge Cleanable Collars.
Harrisons, Inc.
Paints, Varnishes, Pigments, Acids, Etc.
Du Pont Chemical Works
Pyroxylin and Coal Tar Chemicals.
Du Pont Dye Works
Dyes.

DU PONT

brick salesmen at Camp Taylor, all of whom are getting along fine and who will undoubtedly make as good soldiers as salesmen. Sergeant Earle is, we believe, the first of our friends at Camp Taylor to be made a non-commissioned officer. He is in the chief of staff's office as sergeant major. In his letter he is high in his praise of the treatment received at Camp Taylor, and the wonderful opportunity provided earnest workers to secure commissions. Undoubtedly he would appreciate receiving an occasional word from some of his friends in the industry who "are keeping the factory fires burning."

⁂

Pottery Imports and Exports

Imports of earthenware and china for the seven months of the year just issued shows that very little more ware is being received in the United States than last year for the same term. The valuation of the earthenware and china imports for the first seven months this year were valued at $3,387,497, against $3,158,145 for the same term last year.

The bulk of the imports for this term, however, came from Japan, these imports being valued at $839,289. Nothing has been received from Germany. France was the second largest exporter, this ware being valued at $391,406, as against $511,249 for the same term last year. Imports from England show a decrease from last year, the valuation for the first seven months of this year being $263,734, as against $573,422 for the same term in 1916. During July, Japan imported into the United States earthenware and china valued at $165,958, as against $123,537 for July, 1916.

Exports of earthenware and china from the United States for the same seven months this year totaled $705,634, as against about $400,000 for the same term in 1916. There has been a marked advance in the exportation of sanitary ware during the last year, and this is expected to show an increase during the balance of the year, mainly to South American countries.

⁂

Government Wants Ceramic Engineers

We are in receipt of the following communication from S. W. Stratton, director of the Bureau of Standards, Washington, D. C.:

"On account of war conditions the Bureau of Standards is in urgent need of young men especially trained in ceramic engineering. The salaries will range from $1,000 to $1,400, depending upon education and experience.

"We would greatly appreciate your co-operation in securing qualified and available young men. For this purpose I enclose several blank forms, which you might hand or mail to any young men whom you could recommend."

To those ceramic engineers interested in becoming affiliated with the Bureau of Standards, and to assist in the very constructive research and development work which it is doing, *Brick and Clay Record* will very gladly supply an application for appointment, the forms for which we have received from Mr. Stratton.

⁂

Southern Tile Association Calls Meeting

A meeting of the Southern Hollow Tile Association has been called for November 21, at Atlanta, Ga. It will be held at the Ansley Hotel and will be given over principally to consideration of the open price policy. Murray Springer, of Chicago, of the Armstrong Bureau of Related Industries, and E. R. Sturtevant, of Chicago, secretary-treasurer of the Hollow Building Tile Association, will be the principal speakers. President James T. Howington, of the Coral Ridge Clay Products Co., Louisville, Ky., has called a meeting of the board of directors of the association, to be held on November 20, also in Atlanta.

Members of the new Southern organization are becoming more and more enthusiastic about the future of the association. The fact that the revenues of the organization have been somewhat curtailed during the past season has served to restrict its activities, but the members appear to be unanimously of the opinion that the time is propitious for installation of the open price plan.

⁂

Large Vote Advocates Further Price Control

Following the declaration at the War Convention at Atlantic City, that it is right, proper and necessary that the government should have the power to fix prices on all materials needed for the conduct of the war as well as all materials affecting the public interest, for the government itself and the public at large, the Chamber of Commerce of the United States now announces that the preliminary count of the result of a referendum sent to its organization members thruout the country shows that they strongly endorse this sentiment. The referendum, as a matter of fact, was sent to the organizations ahead of the Atlantic City meeting and as usual with such a business vote of the National Chamber, the affiliated bodies were allowed forty-five days in which to consider the recommendations of a special committee.

The following results show how the organizations thruout the United States voted on the recommendations, each organization being allowed from one to ten votes, according to its membership. All recommendations were carried by a decisive vote.

HEAVY VOTE INDICATES WIDE INTEREST

The results of the referendum on the recommendations made by the committee were:

Additional legislation to create authority to control prices during the war—974 in favor; 170 opposed.

That authority to control prices should extend to all articles which have importance in basic industries as well as in war, and which enter into the necessaries of everyday life—978 in favor; 1,160 opposed.

That authority to control prices should extend to raw materials and finished products—977 in favor; 117 opposed.

That authority to control prices should extend to the prices the public pays as well as those paid by the government—946 in favor; 146 opposed.

That authority to control prices should be administered by a small executive board appointed by the President—964 in favor; 121 opposed.

That an agency working in harmony with the board controlling prices should have authority to distribute available supplies to those purchasers whose needs are most directly related to the public welfare—975 in favor; 117 opposed.

That each leading industry and trade should create a representative committee to represent it in conference and to advise with agencies that control prices and distribution—984 in favor; 97 opposed.

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.
400 Chestnut Street
Philadelphia, Pa.

We Believe that the Immediate Future of the Common Brick Industry is Assured

This is particularly so with reference to the construction of new manufacturing plants in cities.

Other operations will take millions.

WHITE Brick

will have the call (just as they are having today) because factories need and must have **light.**

Sand Lime Brick

answer every requirement, they are cheap, they are white in color, and yet they are tough and substantial.

So easy to make that you will be surprised. Write

Jackson & Church Co.
Saginaw, Michigan

The "Saginaw" Rotary Table Brick Press.

CHAMBER'S ATTITUDE ON WAR PROFITS

The National Chamber, according to Elliot H. Goodwin, general secretary, has already gone on record thru a referendum vote of its members committing it to the principle that there should not be a profit interest in war. This principle, Mr. Goodwin said, has been reiterated by the members of the chamber since the United States declared a state of war. Then, he continued, came the special War Convention at Atlantic City where the business men so positively and earnestly went on record declaring that the government should be given complete power to fix all prices for itself and the public.

* * *

Death Summons Harry F. Bigler

Harry F. Bigler, who had been in poor health for several months, died at Hadon Hall, Atlantic City, N. J., on October 25. He had attained the age of seventy years. Mr. Bigler was a life-long resident of Clearfield, Pa., and was a son of former Governor Bigler of Pennsylvania. Up to the time of the consolidation of the Clearfield Fire Brick Co., with the Harbison-Walker Refractories Co., in 1902, Mr. Bigler was president of the former concern. He was also a member of the board of directors of the County National Bank and the Clearfield Water Co., and active in various other enterprises. Mr. Bigler was a brother of the late W. D. Bigler, former assistant treasurer of the United States, and A. E. Bigler, deceased, former collector of internal revenue of the Clearfield district.

* * *

Ohio Tilemaker and Sons Enlist in Army

J. W. Brown, aged 45, a tile manufacturer of New Lexington, Ohio, and his two sons, George and Sheldon, aged 19 and 18, respectively, have enlisted in the New Lexington company of Ohio National Guard and is now in camp at Montgomery, Ala., receiving preliminary training for service in France. The father served in the Spanish-American war and afterwards was enrolled with company H of the Seventh Ohio Infantry. At the beginning of the Mexican trouble he was unable to join the army because of dependency of his family, but since then he has made arrangements to have his family cared for. His son, George, is a corporal.

* * *

To Relieve Southern Traffic Conditions

It is claimed that traffic conditions in the South stand a chance to be greatly improved if the Railroad War Board can manage to work out a movement that was recently launched in Washington, and which has as its object exportation thru southern ports of all export traffic possible. The Southern Railway Co. was one of the first big carriers to undertake this movement, and thru R. L. McKellar, export manager, has been enabled to obtain trainload shipments from various points in the North and East for export thru Atlantic and Gulf ports. Fairfax Harrison, of the Railroads' War Board, has worked up the Co-Ordination Committee, which has the support of a number of the federal boards, and representatives of the buying departments of foreign governments, as well as the railroads. This board plans to have thousands of tons of freight exported thru the southern ports, thereby relieving congestion in the East, and at various crossings and terminals.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

---

Capital for Worthy Clay Plants

Another clay-products manufacturer that has taken advantage of the unusual service offered by F. W. Morgan & Company, First National Bank Building, Chicago, is Kalona (Iowa) Clay Company.

F. W. Morgan & Company had their ceramic engineers make a thoro investigation of the property owned by Kalona Clay Company and also, in accordance with their custom, made further investigations that convinced them of the fact that here was a worthy company, officered by well-known and successful business men, and a property that offered almost unlimited opportunities thru the judicious use of additional capital. Morgan & Company then proceeded to have First Mortgage Six Per Cent Serial Gold Bonds issued to the total amount of $65,000 for immediate sale, and with further privilege of increasing this to $200,000.

F. W. Morgan & Company have just recently placed these bonds on sale, and Kalona Clay Company has already formulated plans for extensive operations.

There are undoubtedly many clay-products manufacturers in America who could produce evidence of their worthiness the same as Kalona Clay Company has done, as well as many others such as Clay Products Company of Brazil, Ind., Whitewater Brick & Tile Company, Whitewater, Wis., and many others who have intrusted their financial matters to F. W. Morgan & Company.

⁂

Guarantee Ten Per Cent. Coal Saving

In a new circular just issued by the Cyclone Grate Bar Company of Buffalo, N. Y., the following paragraphs are worthy of mention. The grates mentioned are for the boiler.

"In one year of use the grates will actually pay for themselves, and will, in addition, pay you a real profit over and above their cost.

"We do not guess, or suppose; we know what these grates will do, and make you a guaranteed promise.

"Figure the money that can be saved this next year—divide your Boiler Room Coal by 10—this is what you will save *with* Cyclones—what you will *lose without them.*

"We make no extravagant claims of one-third to one-half saving, but we do claim and guarantee a 10 per cent. saving which is sufficient to cause any plant to take action favorably. Ask for guaranteed terms from a responsible firm."

⁂

A "Reg'lar" Train Load

The first Erie steam shovel was designed and built in 1912, just about five years ago, and today there are over 400 Eries in service. This remarkable record could be based only on a merit that is tangible.

Erie merit is of the tangible, plain as day kind; when you use it you can see and know that it is profitable to use.

Erie shovels are built on the interchangeable duplicate plan, with all wearing parts made by jigs and to tem-

Having Practically Every Qualification That You Want in a Digger.

The Buckeye Digger

It costs about one-half as much as other power excavators—it costs an equal or less amount to operate—

—yet it does better work for it mixes the clay perfectly. From top to bottom of the bank the clay is sliced off in thin circles, producing always uniform drying and burning.

It does the pit work with less men, releases usually a half dozen men for other plant duties.

It gives you more clay at less expense, mixes it perfectly and uses less men.

Write that letter today

The Buckeye Traction Ditcher Company
Findlay, Ohio

SAY I SAW IT IN BRICK AND CLAY RECORD

Your Coal Troubles Are Not Over

The tentative prices made by the government do not insure against shortage next winter.

You will have difficulty in securing the coal necessary to the operation of your plant.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

A. C. Vicary, Sales Manager of the Ball Engine Company, Viewing a Trainload of Eries

plates, so that interchangeability of working wearing parts of different machines is possible, and also so that orders for parts from the factory will fit when they arrive, without chipping and filing.

In the accompanying photograph of a "reg'lar" train load of Eries, four of them are shown shipped in one lot.

A. C. Vicary, sales manager of the Ball Engine Company, is also shown in the photograph, undoubtedly enjoying the fruits of his efforts, for it is he who conceived the idea of building the Erie Steam Shovel.

He graduated from Case School of Applied Science in Cleveland, Ohio, about ten years ago (Ohio State men remember the Brown and White of that period) and then spent six years in the steam shovel business before making his present connection with the Ball Engine Company.

The Erie Shovel is designed to have a simple control system, so that it will be easier to operate speedily, each part that bears a strain to have a big factor of safety, all parts stronger, all bearings larger—and today there are over four hundred in operation.

* * *

Increase Size of Brown Pyrometer Factory

There has been such an unusual demand for Brown Pyrometers and other scientific instruments that it has been found necessary to make arrangements to increase the size of the factory and to this end the company has purchased a large piece of ground located on the south side of the present factory.

The total property of the Brown Instrument Company of Philadelphia, Pa., will now permit of large extensions from time to time.

* * *

In the October 25 issue of *Brick and Clay Record* the room prices in the advertisement of Hotel Martinique were incorrect, because of a misunderstanding on the part of our Order Department. The price in each case should have been 50c less than mentioned, making rooms with private bath $2.50 and $3.00 per day, and other attractive rooms from $1.50 up.

Hotel Martinique has for a long time been a favorite place for clay-products manufacturers to stop when in New York, and altho most hotels are increasing their rates these days, it will be pleasing news to readers of *Brick and Clay Record* to know that Hotel Martinique continues the same high class service without extra charge.

* * *

H. M. Lee, president of the Duplex Truck Company of Lansing, Michigan, announces that Herman Loeffler has become a member of the Duplex sales department and will represent the company in the eastern states. Mr. Loeffler was connected with the Fairbanks-Morse Company for some years, and for the last three years has been associated with the Novo Engine Company of Lansing.

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other Tuesday by
Kenfield-Leach Company
610 Federal Street Chicago

Chicago, November 20, 1917
Vol. 51 No. 11

Leading Articles in This Issue

What Are You Going to Do About It? 932
Brick Roads Essential....935
Face Brick Makers to Rally at French Lick....939
Vitrification and Watersmoking Slabbing in Drain Tile and Sewer Pipe....942
Properties and Uses of Refractory Materials....945
Rate Fundamentals and Tariff Interpretations....953

⁂

The Editor's Corner....930

⁂

Special Departments

Machinery and Equipment....974
Questions and Answers....958
The Superintendent....955
Wake of the News....964

American Clay Machinery Company....977-979
American Pulverizer Co....986

Baird Mach. & Mfg. Co....963
Ball Engine Co....921
Beighlee Electric Co....966
Bell Locomotive Works....968
Black Diamond....972
Blairsville Machine Co....960
Bonnot Co....914
Bristol Co....965
Broderick & Bascom....959
Brown Instrument Co....928

Canton Grate Co....967
Celite Products Co....958
Chambers Bros. Co....917
Chase Fdry. & Mfg. Co....985
Clarage Fan Co....956
Cleveland Alloys Co....981
Classified Ads....994, 996
Cling-Surface Co....973
Contractors' & Builders' Show....Back Cover
Cork Insert Co....956
Crescent Belt Fastener....957
Crimora Manganese Co....957
Cyclone Grate-Bar Co....964

Didier-March Co....988

Eagle Iron Works....958
Elwell-Parker Electric....961
Engelhard, Chas....923
Exner, J. E....969

Fate Co....997
French Lick Springs Hotel....924

Gandy Belting Co....971
Garnet Company....981
General Electric Co....927
General Store....981
Goodrich Co....956

Hardinge Bros., Inc....957
Harris Bros. Co....996
Hendrick Mfg. Co....985
Hercules Powder Co....922
Hettrick Mfg. Co....968
Homestead Valve Mfg. Co....960

International Clay Machinery Co....918-919

Jackson & Church Co....970

K-B Pulverizer Co....959
Keystone Driller Co....961

Lakewood Eng. Co....991
Link-Belt Company....926

Main Belting Co....915
Manufacturers Eq. Co....916
Marion M. Fd. & S. Co....958
Marion Steam Shovel Co....965
Marsh & Co., Geo. C....995
Martinique Hotel....959
Mathews Gravity Carrier....987
Morgan Co., F. W....956

Ohio Filler & Shield Co....967
Ohio Galv. & Mfg. Co....986
Orenstein-Arthur Koppel Co....989
Osgood Co....985
Owens Continuous Tunnel Kiln Co....981

Philadelphia Textile Machinery Co....920
Potts & Co....956
Price Electric Co....962

Quaker City Rubber Co....989

Roessler & Hasslacher....962
Rollin Chemical Co....963

Sanderson-Cyclone Drill....957
Sauerman Bros....956
Sawyer Belting Co....990
Scandinavia Belting Co....960
Schofield-Burkett Cons....988
Sero-Specialty Co....959
Service Motor Truck Co....925
Smith Co., Claude....913
Standard Dry Kiln Co....966
Stupakoff Laboratories....958

Taylor Instrument Companies....969
Thew Auto Shovel Co....990
Thwing Instrument Co....964
Trautwein Dryer & Engineering Co....913

Union Chain & Mfg. Co....956

Victor Balata & Textile Belting Co....985

Watt Mining Car Wheel....987
Webner, F. E....981
Webster & Kincaid....Front Cover
Weller Mfg. Co....912
Wellington Machine Co....992-993
Westinghouse El. & Mfg....991
Wood & Co., R. D....975

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

Beg to Differ With the Governor

HON. FRANK O. LOWDEN, governor of Illinois, in a speech delivered at Bloomington, before the sixth annual meeting of the Illinois Highway Improvement Association, said with regard to the $60,000,000 bond issue for Illinois roads on which the state will be asked to vote next year:

"Any one will tell you that if we had to build these roads now, at the present prices of road material and labor, the $60,000,000 wouldn't begin to build the mileage planned."

He said further: "A lot of men will be thrown out of employment when that time (peace) comes; building material will be vastly cheaper. There won't be the demand for these cantonments, for the increase in these factories that are building additions for munitions of war, and all that kind of thing.

"Not only, therefore, will you build much more cheaply than you would in ordinary times but you will help hold the ship of state steady by furnishing employment—much needed employment—to labor that otherwise would be idle. The time for public improvements is always when there is a depression."

The governor, no doubt, meant well when he spoke these words but we fear that he has overlooked a few facts which will have a considerable bearing on the situation when the war is over.

We agree with him when he says that the $60,000,000 will not build as many miles of road this year as it would have two or three years ago. Neither will a dollar buy as much bacon as it did before the war in Europe broke out. We have a new yard stick of values these days with which we must measure everything, including roads.

Of course a large number of men and women, employed in the manufacture of war commodities will be thrown out of work when peace is signed, and a whole army of soldiers will return to resume peaceful pursuits, but we believe that work in other channels which has been neglected thruout the war will absorb this surplus labor in little time. The nation is underbuilt and very little progress is being made towards remedying that condition at the present time. There will undoubtedly be a burst of building construction when the world's armies have laid down their guns, and this will result in the maintenance at least of present price levels, both of labor and materials.

Road building programs have made very small headway during the past year or more, and it is obvious that little else but military roads and highways between heavy freight traffic centers will be constructed until peace is signed, so that when the war ends, it will naturally follow that these delayed road road building plans will be given immediate attention. We do not believe that this will have a tendency to make paving materials and labor any cheaper.

We do not believe that it is well to encourage postponement of projects at this time on the ground that they can be undertaken more cheaply later. Let us build all the roads now that we can without interfering with the government's war plans so as to spread the work out and lessen the danger of a jam when peace comes.

⁂

No Time For Delay

ON the next following pages of this issue appears a very important article entitled "What Are You Going to Do About It?" Since writing this article it has come to our attention that under date of November 15 the denial of rail transportation to more than five hundred commodities classed as non-essential was recommended to the government by the Railroad War Board.

At the same time the board put out a statement declaring the country's railroads at the present rate of increase in traffic will be unable to meet demands that will be made upon them this winter.

The commodities included in the recommendation were not made public.

The list of commodities classed as non-essential was made up by a committee of railroad traffic officers, at the request of Robert S. Lovett, the government director of priority transportation. A copy was turned over to Fuel Administrator Garfield who is also contemplating the curtailment of coal supplies to industries not necessary to the public welfare.

The list contains 450 commodities whose transportation, it is declared, could be dispensed with without any great inconvenience to the public, and seventy-five which it is held the public could dispense with, but not without inconvenience.

Since Mr. Lovett has already evinced an interest in building materials, the above information should most certainly receive the utmost attention on the part of clay products manufacturers everywhere. We believe that this report emphasizes the great need for co-ordination as between the various branches of the industry, especially during the present national crisis. We also believe that the necessity for wasting no time in starting something looking toward that end is given even greater emphasis.

The case of the entire clayworking industry should be placed fairly and clearly before Mr. Lovett and Dr. Garfield. A few facts with regard to essentials and non-essentials among clay products in the present international situation are given on the following pages. These might be amplified and more details obtained by a representative national organization, such as is suggested, and then laid before those in authority, whom, we believe, are anxious to have the advice of all concerned in the very important tasks which they have in hand. It is far better to co-operate in an effort to avoid needlessly harmful action before it is taken than to try to correct it after the mischief is done.

⁂

The Cry of the Nation's Workers

YOU need our work—**give us homes,**" is the appeal of workingmen and women, as well as their families, the country over. In hundreds of cities and towns in the United States rents have been raised and the quality of accommodations lowered because of the great influx of population to manufacturing centers. In many locations there are not even enough high-priced (compared to normal times) small houses, tenements or apartments to take care of those who daily are arriving in towns where war work is offered, and as a result they have been living in tents and box cars.

But workers cannot be expected to live indefinitely in this manner. Manufacturers are learning that they must lend a helping hand in alleviating the present distressing housing conditions which obtain in many quarters. They are realizing that money invested in comfortable, sanitary and substantial buildings in which their employes may live at a nominal rental or purchase on easy terms, is more than returned in lessened labor turn-over and increased efficiency of workmen. And they are learning that they cannot hold men unless they do provide homes.

"Communities are learning they must organize housing companies on a big scale, with the monetary return on their investments in good houses limited to five or even four per cent., if they expect to keep workers in their cities," says Lawrence Veiller, secretary and director of The National Housing Association, in speaking about this subject recently.

"The governments of Britain, France and Canada have found it necessary to finance vast building operations of model houses for munitions workers in order that their armies overseas should be supplied with what they need."

The need for action looking toward an increase in the supply of homes for workingmen is urgent. Brick, hollow tile and other clay products have in the past been, and can with increased effectiveness in the immediate future be employed in the construction of low cost, sanitary and substantial dwellings.

Herein is a great opportunity presented to clay products manufacturers. Some time and money might be well invested in a propaganda to show manufacturers, both large and small, the importance of providing suitable housing for employes without delay, and then bring home the wisdom of using burned clay wares for this purpose. We believe that if this were properly and effectively done, it would leave little doubt in the mind of official Washington as to whether brick and tile are essential at the present time for something beside factory extensions.

⁂

A Frill That Can Be Cut Off

IT HAS GRADUALLY BECOME the custom for business houses to send out large numbers of Christmas and New Year cards to customers and friends, extending compliments of the season.

There was a time, no doubt, before the printer's and lithographer's arts became so highly developed that these greeting cards bore a personal message and were received with a spirit of gratification and pleasure. With the passing of the years, however, the sending of these cards has become so general that the post office department is deluged with tons of this mail matter during the holiday season. To be sure these missives are beautiful to behold and many express sentiments that are touching, but in all too many cases they have lost their sincerity, acquiring a most stereotyped form.

With the nation at war this year, would it not be a very sensible thing to dispense with these Christmas and New Year cards, diverting what money would otherwise be spent in this direction into relief channels? A number of companies in Chicago, whose custom has been to distribute engraved holiday greeting cards, have decided not to do so this year, but instead to contribute the money toward the alleviation of suffering, the reduction of hunger, and the care of sick and wounded. This is a good movement, we believe; one which does not need to be confined to Chicago alone, but which might well be taken up by business houses all over the country.

Another phase of this matter is that the supply of labor in all parts of the country is wholly inadequate for necessary, important and productive enterprises. The successful outcome of the above mentioned movement would release labor from non-productive and consuming enterprises which would be diverted into productive lines.

WHAT ARE YOU GO-

These Are the Facts: The Clay Products Industry is Fac-
Other, the Provision of Empty Cars for the Shipment of
tials and Non-Essentials to Be Dealt With. The Sit-

TODAY IS A TIME when the greatest wisdom and most careful procedure is required of every clay products manufacturer with regard to his business.

Slowly, but surely the people of this great United States are coming to realize that we are at war—one which has already proved to be the most terrible the world has ever seen and which will cost in both lives and money infinitely more than any armed conflict or group of conflicts between nations recorded in history.

RAILROADS PLAYING A VITAL PART

The government has already requisitioned a substantial portion of the nation's industrial resources and will ask for more as its plans develop. In the speeding up of operations in these industrial resources, the railroads of the country are playing a very vital part. Not only that, but they are the very life blood of the nation's military organization. Without the unfailing service of the railroads, factories filling government contracts for all kinds of commodities from wash boilers to sixteen-inch guns would have to close their doors. Soldiers would have to march from all parts of the country to the training camps if the iron steeds with their coaches trailing behind were not ready to provide a swift and comfortable ride.

A great deal depends upon the railroads in the present crisis, but sad to relate they are not able to measure up to the requirements, and because of lack of motive power, coupled with inability to add much to existing freight car equipment, have been and are a very substantial contributing cause to the present shortage of coal, ore, and some food commodities. The railroads have done surprisingly well under existing conditions and are to be warmly congratulated upon their excellent performance to date, but they cannot produce by magic the necessary additional locomotives and cars that are needed for better and more adequate transportation service.

MANUFACTURERS FACE TWO PROBLEMS

There are two problems, or rather two phases of the transportation problem, that present themselves to the clay products manufacturers today for serious and earnest thought. One is the matter of fuel supply, and the other, the provision of empty cars for the shipment of finished clay wares.

Taking the last-mentioned problem first, it is now matter of common knowledge that Robert S. Lovett, administrative officer under the provisions of the Priority Act, has issued a formal order restricting the use of open top freight cars, or flat cars. Effective November 1, the use of such cars, except in shipments for the United States government, has been denied in the transportation of the following commodities:

(1) Materials and supplies other than coal, for the construction, maintenance or repair of public or private highways, roadways, streets or sidewalks.

(2) Materials and supplies, other than coal, for the construction, maintenance or repair of theatres or other buildings or structures to be used for amusement purposes.

(3) Materials and supplies, other than coal, for the manufacture of pleasure vehicles, furniture or muscial instruments.

(4) Passenger vehicles, furniture and musical instruments.

ORDER NOT AS DRASTIC AS SEEMS

It does not take a great deal of mental acuteness to see that the manufacturer of clay products is hit in the embargoes against "materials and supplies." Of course, the above order is not as drastic as it might seem on first sight, as many clay products are shipped in box and even stock cars. Brick perhaps suffers the most since it is usually transported in gondolas. Just what effect future priority orders will have on the industry as a whole is something that only time can reveal.

With regard to the second of the aforementioned problems, a man who is very active among clay products manufacturers said the other day: "The whole clayworking industry faces a very serious situation in the matter of coal." He was not trying to scare anyone but this statement reveals the direction in which to look. Extreme difficulty in, or the utter impossibility of getting coal depends in a large degree on the car supply to the mines for ship-

ING *to* DO ABOUT IT?

ing Two Serious Problems—One is Fuel Supply, and the
Finished Wares, With the Additional Problem of Essen-
uation Needs Wise Handling. Here Are Some Suggestions

ping clay plant coal. But there is another development bearing upon the coal supply to the clayworking industry that is attracting more attention than that just previously mentioned.

NON-ESSENTIALS TO BE DETERMINED?

The matter of essential and non-essential business in connection with the conduct of the war is attracting considerable attention just now. Business men everywhere are wondering what is non-essential business. The committee of the Chamber of Commerce of the United States co-operating with the Council of National Defense is receiving many inquiries as to the manner in which this will be determined by the government and what course will be followed in withdrawing labor and materials, **including coal,** from such industries as may be regarded as non-essential during the war. No policy in this connection has been announced by the government and according to the committee the above questions cannot be answered.

It may be that sooner or later the government will have to render a decision in this matter and it is with this thought in mind that the clay products manufacturing industry should be carefully preparing its case.

Is the industry in whole or in part non-essential, or are there some products which come from its kilns that are essential in the present crisis? Let us take some of the branches of the industry and examine them hurriedly with this thought in mind.

FIRE BRICK SURELY ESSENTIAL

There is little question but that the continued production of fire brick and all kinds of refractories is vitally necessary to capacity operation of the nation's steel and iron mills and other metallurgical institutions. This is almost axiomatic, and so it will not be necessary to go into details regarding this particular branch of the industry.

Jumping to drain tile, would it not be highly inconsistent indeed to urge the farmer to produce to his utmost ability all varieties of foodstuffs and at the same time deny him one of the most valuable aids he can secure toward that end? Adequate farm drainage and successful crops go hand in hand.

One way in which to relieve in part the tremendous strain on the nation's railroads is to provide better roads and highways for short hauls via motor truck. The Cleveland-Akron (Ohio) road, constructed almost exclusively of vitrified paving brick, is an excellent example of what is possible along this line. This road has no doubt helped greatly in the transportation of all kinds of commodities between the two busy centers above mentioned. More of this same thing is possible. The construction of badly needed hard roads between important points should be encouraged in every way—and not discouraged by immature action.

INDUSTRIAL HOUSING

One of the most distressing problems at the present time is the housing of employes in large manufacturing centers. Many towns and cities are at their wits end trying to find a place to sleep for the hordes of workmen pouring into these points. The need for more houses is imperative. Indeed, government action of some kind may almost be expected to get movement started looking toward the construction of a large number of workingmen's dwellings of the cottage type and others capable of housing two, three, four, and more families. Common brick and hollow tile offer excellent materials for this work, since their cost is not more than ten per cent. above frame. It is inconceivable that any municipality would want a lot of temporary, flimsy shacks to grace the horizon. All thru New England one sees adjacent to textile and shoe factories built of brick, groups of houses also constructed of brick. These buildings are a credit to the community. Hollow tile, particularly, could be used to great advantage in this connection owing to its inexpensive construction.

Of course, there are some clay products that cannot be classed as war commodities and then there are some that are recognized as indispensable staples. The industry as a whole, however, is of sufficient importance in the conduct of the war to warrant adequate representation at Washington in the councils of those who will say what is essential and what is non-essential.

UNPOPULAR TO "KICK"

It is getting to be unpopular and even unpatriotic to go to Washington in a hurry when some important action is taken, affecting a specific industry or interest, and register a "kick." It is far better to be there before the action is taken, co-operating with governmental authorities. The men in Washington who have these important matters concerning business and industry in hand are human beings. Their knowledge of facts and conditions is limited, They should have the co-operation of every business in solving the difficult problems of these abnormal times so as to avoid taking action that would prove injurious to any interest.

Here is where you can do something, **now.** The matter of co-operating with the government, seeing that the proper authorities are made familiar with all of the facts in the case, impressing upon their minds the fact that many clay products cannot possibly be considered non-essential, is something for trade associations to handle. The government is making it plain that it prefers to deal with groups of manufacturers or dealers representing a distinct line of business than with individuals.

Many of our clay products associations have and will continue to do excellent work along this line. Others are doing little or nothing and still other branches of the industry have no adequate organization. **Those in the last two mentioned classes should get busy and insist upon results or the formation of new associations in branches of the industry where none exist now.**

SERIOUS BUSINESS

The time for temporizing is past. This is no time to play with the issue. Every branch of the clay products industry that can be considered as essential in the present crisis should be prepared to lay facts and reasons before official Washington, showing why neither coal nor empty cars should be withheld—that its product is really essential to public welfare and the successful prosecution of the war.

There is, furthermore, great need for a force or a tie that will bind the various branches of the industry together for effective work during the duration of the war, particularly, and also after. When the time comes to speak—and that time, we believe, is not far off—if the organized manufacturers of every kind of clay product could speak as with one powerful voice, it would make a lot of difference in the results obtained.

A better national organization as between the different branches of the industry—common brick, paving brick, face brick, hollow tile, sewer pipe, terra cotta, etc.—is needed to produce a more effective working force. There are men in this industry—manufacturers of clay products—who are perfectly capable of whipping such a force into shape. This is a matter for all interested to think about very seriously. The time is short and the need is urgent. **What are YOU going to do about it?**

⁂

Dates Set for Coming Meeting of the American Ceramic Society

February 11, 12, and 13, 1918, have been set as the days upon which the American Ceramic Society will hold its twentieth annual meeting; and Indianapolis, Ind., has been chosen as the gathering place, by the Board of Trustees, according to an announcement sent out from the office of the secretary pro tem, Arthur S. Watts.

The importance of the coming meeting cannot be emphasized too strongly. The problems to be discussed and the vitally important matters regarding the future of the society itself which are likely to be brought up for consideration compel the attention of every member; there should be a great effort made to bring the attendance to the highest possible mark.

Not only the individual members should be present at the sessions, but every branch of the industry should make an effort to be represented, both in the attendance and on the program. "At no time in the history of the society," writes Mr. Watts, "has up-to-date information on ceramics been so much in demand, or so readily utilized by the industries." The problems which confront all branches of the industry today, more momentous than any that have been met with before, will undoubtedly be discussed at length and a special effort is being made to make the program as timely and valuable as possible.

It is not enough to be in attendance at the coming meeting of the American Ceramic Society. Send the secretary notice of your proposed attendance and also a statement of the subjects upon which you will present a paper, or lead a discussion. A blank to be used for this purpose is being sent to all members of the society; and when you receive yours, fill it out and send it in. The success of the meeting depends upon each individual member doing his share.

The meeting of the N. B. M. A. will be held in Indianapolis the latter portion of the same week.

⁂

Canadian Company Prospering

To judge from the optimism permeating a letter recently received from P. A. Galarneau of the Citadel Brick and Paving Block Co., Quebec, Ont., Can., and the physical expansion which that company is undergoing, business is not at all poor. At the present time this concern is constructing a new continuous kiln with a capacity of 40,000 brick a day, which, when added to the company's present output, will give a total daily capacity of 100,000 brick.

The foundations for this new kiln have already been dug and the roof is now being erected on pillars in order to enable the bricklaying and masonry work to proceed during the winter, until the kiln is finished. "You probably know that the winters in this part of the country are pretty severe," writes Mr. Galarneau, "altho not severe enough to prevent us from making brick sometimes under six feet of snow and forty degrees below zero."

One Hundred and Fourteen of the Members and Guests in Attendance at the Fourteenth Annual Meeting of the National Paving Brick Manufacturers' Association Gathered Around the Banquet Tables, on the Evening of November 19.

BRICK ROADS ESSENTIAL

This Is the Unanimous Opinion of Those Present at the Fourteenth Annual Meeting of the National Paving Brick Manufacturers' Association, Cleveland, Nov. 19 and 20

CLEVELAND, OHIO, November 20—Highways to transport tonnage which railroads and waterways are unable to care for have become a national necessity—that was the slogan of the Fourteenth Annual Meeting of the National Paving Brick Manufacturers' Association which closed here today. Going a step further in the development of this thought all who were present at this remarkably well attended and successful conference were confronted by the question: Shall we, who are able to supply the nation's need remain unconcerned in this hour when that need is most vital to sustain our country's industrial power and its military supremacy? The nation's transportation want is our opportunity to serve. Shall we be equal to the responsibility?

PRESIDENT REVIEWS YEAR'S DEVELOPMENTS

After quickly disposing of the usual formalities of the roll call and reading of the minutes of the last annual meeting, President C. C. Blair, now of the Metropolitan Paving Brick Company, Canton and Youngstown, Ohio, read his address.

Mr. Blair called the attention of those present to the unusual developments of the past year, the entrance of the United States into the world conflict and the large part which she seemed destined to play in providing munitions, men and money in the carrying on of a successful war. He said that while some industries had profited immensely from the development of abnormal conditions, others have been practically put out of business, but that the paving brick industry belonged to neither of these two extremes.

"At the beginning of our present season," said Mr. Blair, "a large number of us were loaded with orders taken on a pre-war basis. We soon found that we were being confronted with conditions seriously affecting the cost of our material; wages were steadily advancing, labor scarce and inefficient, fuel doubling—yes, even trebling in price, and it was impossible to be assured of a constant and regular supply. Supplies were going up by leaps and bounds—what were we to do—there was no recourse except to get more money for our product. This brought us face to face with other difficulties. Our customers, not at first realizing conditions, were indignant; competing materials not so severely affected were at once placed on a more favorable basis. The greater part of the work coming thru had been estimated under conditions pertaining to the year before. The work could not be let and in many cases the laws were such that all legislation had to be re-enacted from the very beginning, and with but few exceptions new estimates had to be made. All these things took time and work was slow in coming out."

CONTRACTORS GET SHAKY

Following upon the heels of the above conditions, contractors began to see that they were playing a losing game, President Blair pointed out, and responsible contractors commenced to be afraid to take a chance on the work being offered under such rapidly changing conditions, so that many contracts that would ordinarily have gone to the brick manufacturer were held up or let to some other form of pavement.

To add further to these difficulties, he said, in the excitement and confusion of the early days of the war, agitation was started by certain influential people to stop public improvements. This condition called for quick action, but the situation is still critical. Likewise the numerous orders issued by the Council of National Defense, bearing on the shipping situation, have been troublesome.

Then Mr. Blair said: "These troubles emphasize the fact that our own and all other industries must be organized and ready, in order to properly prevent or combat conditions, so that we may suffer as little as possible in the prosecution of the war. None of us is able to do this alone —the only way we can accomplish anything is to present a united and harmonious front. We must get together for this purpose, if for no other."

PRESENTS INDUSTRY'S WAR PROBLEMS

After calling attention to the important part which the industry could play in the conduct of the war by assisting in the construction of dependable roads to relieve the traffic congestion on the railroads, President Blair presented some present day problems to be solved by the united industry. These are:

First: The construction of types of construction.
Second: Promotion.
Third: Contractors or contracting conditions.

He took each of these problems up in detail and with regard to the first mentioned, urged a standardization of construction; second, a co-ordination of all paving brick interests in the support of a national campaign of publicity and advertising, and third, a taking in hand of the contracting situation and providing the machinery and organization for the construction of brick roads that are right when in localities and in situations where the above agencies do not exist or are wholly inadequate.

President Blair closed his inspiring address by a plea to every paving brick manufacturer outside the fold to "hit the saw-dust trail" of the association, following which he expressed perfect confidence that the organization would then occupy the place to which it is rightly entitled

THE SECRETARY'S REPORT

Secretary Will P. Blair's report covered a number of subjects and mentioned many of the association's activities.

"Regardless of new and disturbing influences that have been forced upon us, we have tried to hold on to what we have attained and if possible occupy a better position of favor with the public than ever before," said Mr. Blair He then went on to enumerate the numberless instances in which the association had co-operated with other organizations and with individuals to further the use of vitrified paving brick and mentioned the constant battle that was going on to defend the merits of this commodity and to correct false statements and impressions with regard to its worth and value. The encouraging desire on the part of city engineers to have their work done in the most approved manner, was also emphasized.

These are factors that affect the industry now as well as in normal times. Mr. Blair stated, but by reason of war conditions, the paving brick industry is most seriously affected in ways that seem to have grown serious and which hitherto have not been felt so forcefully in spite of the fact that they have always existed to a greater or less degree. They make an otherwise willing public hesitate over improvements.

In this category there is:
First: The high cost of production.
Second: The great lack of competent, dependable contractors.
Third: The great shortage of transportation facilities.
Fourth: Low estimates where the law forbids the awarding of contracts on bids in excess of certain limitations.
Fifth: The special want of sufficient funds for a campaign for national advertising.

KNOW COST AND SELL AT PROFIT

Secretary Blair took these subjects up, one by one, discussing each in detail. He said that it might be well to consider ways and means for reducing present manufacturing costs, but that there was at least one thing which everyone should do and that was to know exact cost and sell at a profit. Attention was called to the splendid work of the Institute of Paving Brick Manufacturers which has perfected at great expense a system of cost accounting.

With regard to the second of the above mentioned problems, Secretary Blair recommended the appointment of a special committee on the subject of contractors to work out some method of mobilizing a force of reliable, dependable and competent contractors similar to that which is organized in the interest of other paving materials.

The need for creating the belief that paving brick is one of the commodities that occupies a position of precedence in its use to assist in food distribution and war supplies, as a solution to the problem of securing coal for manufacturing paving brick and cars for shipping the finished product, was strongly urged, in connection with the third point. It was said that efforts in this direction had already met with some degree of success.

Concerning the fourth problem, Mr. Blair said that there was a class of laws on our statute books that ought to be repealed. These have to do with the making of estimates on prospective paving work, and which forbid awards when bids exceeding these estimates are given.

And last, an urgent appeal was made for serious consideration of a national campaign of advertising and publicity which would impress upon the mind of the American people the great need for more improved and dependable brick highways at this critical time when good roads were so badly needed in the transportation of all kinds of commodities.

In closing Mr. Blair presented the request of the Chamber of Commerce of the United States for the appointment of a committee from the association to represent the paving brick industry and to serve as a connecting link between it and the government.

ASST. SECRETARY'S AND ENGINEER'S REPORTS

H. H. Macdonald, assistant secretary, with his characteristic "pep" made a forceful appeal for the launching of a national campaign of advertising and publicity, admirably backing up the president and secretary in the emphasis which they placed upon this matter.

"The means for carrying on a campaign presents itself in a very practical way," said Mr. Macdonald. "Let it be assumed that 20,000,000 yards of paving brick were sold during 1917. The regular assessment of a half a cent a yard would produce $100,000. The total expenses of the association are not more than $35,000 a year. The cost of handling the advertising would not increase current expenses and would leave $65,000 for the purchase of space. This would be sufficient to give the public a comprehensive idea of the merits of paving brick."

Maurice B. Greenough, association engineer, devoted his entire report to a discussion of the contractor situation, and urged either the organization of a joint contracting company on a scale broad enough to prevent thruout the market territory work passing without bidders and work falling into the hands of unworthy contractors, or the establishment of a corps of trained engineers, each operating over an assigned territory, whose duties shall comprise the inspecting of all brick paving within their territory and furthering the use of the material. It was suggested that these inspectors be fortified by an addition of clauses to all contracts for the sale of paving brick which stipulate the retention by the industry of inspecting and directing power in the use of the material.

In concluding his report, Mr. Greenough called the attention of the manufacturers to a recent case in Pennsylvania in which brick had already been excluded from one hundred miles of road and probably thousands in the future. This came about thru the issuing of an order by the state highway department forbidding the use of anything but a concrete base, because it had been found that rolled stone or slag bases had not been properly constructed.

TREASURER REPORTS HEALTHY BALANCE

The faithful and worthy custodian of the association funds—C. C. Barr of Streator—then read his report which showed a balance of $9,467 on hand. His report also revealed the fact that close to $45,000 had been received during the past year, together with the balance on hand at the last annual meeting, and that more than $50,000 had been expended since October, 1917.

This was followed by the reading of a report by Charles J. Deckman, chairman of the committee on officers reports in which most of the recommendations that had been made were heartily approved.

After a brief recess for lunch the conference reconvened, various committee reports being taken up. Of all these that of the special committee on federal aid was perhaps the most interesting. Will P. Blair, who is chairman of this committee, went into some detail concerning the work of this committee, telling particularly of its effects to obtain a square deal for the paving brick industry in connection with Priority Order No. 2, in which Judge Lovett denied the use of open top cars for the transportation of road materials on the ground of their being nonessential.

Mr. Blair said that as a result of a vigorous protest on the part of his association and other highway interests, the priority board stated the order was only temporary and would be rescinded as quickly as possible.

OFFICIAL WASHINGTON SURPRISED AT ORDER

The secretary said further that in interviewing other officials at Washington they expressed surprise at the order of Robert S. Lovett and that they could not understand it. Secretary of Commerce Redfield went so far as to say that he had already prepared a story for the press, urging the undertaking at once of a vigorous road building program on the ground that good highways were essential in the present crisis for several reasons.

As a result of the realization in Washington of the importance of road building and road maintenance at the present time, it is understood that a Highways Transport Committee has been appointed which will have as its duty the handling of the road proposition—seeing that all possible use is made of roads in the transportation of freight and food supplies and that new roads are built where needed for this purpose.

Considerable discussion was had in the session on Monday afternoon, November 19, between the members as to whether or not the paving brick industry is essential to the successful carrying on of the war and the almost unanimous opinion was that it is and that every effort should be made to impress upon the government the necessity for the industry receiving preferred attention in the matter of car service and fuel supply.

On Monday evening the one hundred and fourteen members and guests present at the convention sat down to a delightful dinner, after which the toastmaster, Charles A. Otis, president of the Cleveland Chamber of Commerce, brought up his heavy artillery and bombarded the guests for a few hours with after-dinner speeches. These talks took a very interesting and instructive form, centering around the belief that now, if at any time, was the moment at which good roads should be pushed and pushed with a might. "If you can get a railroad car haul it over a brick paved road" was the keynote of this after-dinner conference, but it was emphasized that in order to have a brick road over which to haul the load one must have already been built or be in the course of construction and where there was no such road between important traffic centers no time should be lost in building one.

D. S. Humphrey, member of Ohio State Highway Advisory Board, was to have been the first speaker of the evening, but owing to an unavoidable and unexpected engagement, was unable to come. He sent a letter, however, the substance of which was the brick roads ought to be built for less money. Fred Caley, secretary of the Cleveland Automobile Club, who is always a welcome feature at a good roads gathering, delivered an inspiring address in which he touched upon the war and dwelt at length upon the construction of dependable highways as a part of the nation's business at the present time.

John A. Penton, publisher of the "Iron Trade Review," followed Mr. Caley with a good talk on the value of association work and the great need for the closest co-operation at the present moment of all business men in political and governmental matters. Mr. Penton said that it was the business man's business to see that the right kind of men got in positions of power. He said that the time was coming when the president of the United States would be the premier business man of the nation, surrounded by a cabinet and by the officers chosen mainly for their business ability.

COMMITTEE RECOMMENDATIONS OPEN SECOND DAY

The first business of Tuesday morning, November 20, was the report of a special committee appointed the previous day, headed by H. S. Renkert, of the Metropolitan Paving Brick Co., Canton, Ohio, which recommended in a series of resolutions, the following action:

First, that the association take immediate steps to join the Chamber of Commerce of the United States.

Second, that a committee be appointed by the president of the association to represent the industry at Washington, serving as a connecting link between itself and the government in order that industrial life be maintained in a sound condition in these abnormal times.

Third, that the membership committee be increased to five, and the secretary of the association added as an ex-officio member, and that this committee be charged with the task of bringing in those "outside the fold," as well as bringing about a closer relationship between the other various existing paving brick organizations, local, state and interstate.

Fourth, that a special committee be appointed to take the contractor situation in hand and work out a solution.

And last, that overture be made to proper officials or body at Washington, looking to the appointment of H. M. Williams, of Lima, Ohio, as a member of the newly created highways transportation committee, which is to handle the road problem during the war.

All of these recommendations were unanimously approved by the association and will be carried out.

Some weeks ago, the association sent the following inquiries to state highway commissioners and city engineers: How is the work of street building progressing under your department? What are the chief hindrances to the progress of street improvement, if any? What is the census of public sentiment in your state toward pushing improvements as fast as conditions will permit?

Association Engineer M. B. Greenough presented a tabulation of the replies that were received to these questions and by means of a graphically designed chart showed that, in answer to the first inquiry, the state highway commissioners reported that covering forty-two per cent. of the work the progress was fair, thirty-five and one-half per cent. slow while nineteen and three-tenths per cent. showed excellent progress.

PROPERTY OWNERS BACK PUSHING PROJECTS

The commissioners said that of the chief hindrances to road and street improvement, labor shortage constituted forty-two per cent., transportation shortage, thirty-eight per cent., high prices only ten per cent., and no funds, six per cent. Ninety-three and one-half per cent. of the property owners, the commissioners reported, were favorable or very favorable to pushing road improvements as fast as possible, while six and one-half per cent. were noncommital. Figures were also given covering the replies received from the city engineers, these differing somewhat from the percentages given above.

"The location and extent of the paving brick market," a summary of reports of members and manufacturers, was presented by Association Engineer Greenough by means of another chart. He showed that cities of less than ten thousand inhabitants during the past year absorbed twenty-four and four-tenths per cent. of the industry's output, cities of ten to twenty-five thousand, nineteen per cent., twenty-five to one hundred thousand, twelve and seven-tenths per cent., over one hundred thousand, twenty-one and seven-tenths, country roads, seventeen and three-tenths, and miscellaneous three and nine-tenths. James R. Marker, former state highway commissioner of Ohio, then followed with a discussion of the subject, which proved to be very illuminating and helpful.

Greater attention on the part of paving brick manufacturers to this subject was urged by Secretary Blair and R. C. Burton, of the Burton Townsend Co., Zanesville, Ohio.

PITCH AS A BINDER AND FILLER

The session after lunch opened with an address by Mr. Crandall, of the Barrett Manufacturing Co., on the merits of pitch as a binder in the construction of a macadam base for brick roads, and also as a filler. *Brick and Clay Record* in a past issue has published an article on the subject from the pen of Mr. Crandall, so that this is no new subject to our readers. The value of this type of brick road construction is very evident in view of existing prices for cement.

A paper entitled "The Relationship of the Present Labor and Fuel Cost to the Market," prepared by Marion W. Blair, was read by M. B. Greenough in the absence of the author. This was a very excellent address and may be reproduced in full at a future date.

John W. Sibley, secretary of the Southern Paving Brick Manufacturers' Association, Birmingham, Ala., then called attention to the action of the Association of Investment Bankers taken recently at a meeting in Baltimore, where a motion was passed calling upon the members of that association not to handle the bonds and securities of municipalities, counties, and other governmental bodies for the duration of the war. It was the sense of the convention that a vigorous protest be registered against this action and Mr. Sibley was appointed a committee of one to carry out this plan.

As the convention was drawing to a close, Harvey C. Adams, of the Danville (Ill.) Brick Co., rose to address the assembly and made a strong plea for serious consideration of a more progressive national advertising program. After much discussion on this subject, President Blair announced the personnel of the new membership committee, Mr. Adams being made chairman, with Spencer M. Duty, of the Medal Paving Brick Co., F. L. Manning, of the Peebles Paving Brick Co., Eben Rodgers, of the Alton Brick Co., and F. L. Stowell, of the Sterling Brick Co., as the other members, together with Secretary William P. Blair. One of the duties of this committee will be the working out of a suitable plan for a broader publicity policy; and it really looks as tho something will be accomplished by this capable committee.

Just before adjournment, a telegram was received calling attention to the annual meeting of the State Highway Commissioners' Association at Richmond, Va., December 5 and 6, which meeting, it was stated, should declare road building a war necessity. A motion was passed urging every member of the National Paving Brick Manufacturers' Association to get busy with the commissioners in their state looking toward this end.

⁂

H. H. Macdonald Leaves Paving Brick Association

The closing session of the fourteenth annual meeting of the National Paving Brick Manufacturers' Association was marked by a very touching incident. Since early Monday morning, the opening day of the convention, word was passed around that "Mac," as he is familiarly called, was about to bid farewell to the industry, having secured a new and very responsible assignment as secretary of the Gypsum Industries Association, with headquarters in Chicago.

Charles J. Deckman, formerly of the Medal Paving Brick Co., and a well known figure in the industry, was appointed a committee of one to present a resolution of gratitude for the excellent work that Mr. Macdonald has done in his office as assistant secretary. With tears in his eyes, Mr. Deckman gave a short talk and with broken sentences read the resolution, which, it was declared, hardly expressed the feelings of the members. He then presented "Mac" with a tie pin as a token of appreciation. Mr. Macdonald, moved more deeply than words can express, in a short reply thanked the members for their kindness.

Mr. Macdonald's resignation takes effect December 15, after which time he will be connected with the gypsum industry, which has already claimed another figure formerly well known in clay working circles, particularly in an engineering capacity, Virgil G. Marani.

⁂

Commissioners of Barton County, Kans., accompanied by G. W. Thurston, secretary of the Western Paving Brick Manufacturers Association, Kansas City, Mo., recently inspected monolithic highways in Illinois and Ohio. On their return to Great Bend Kan., the commissioners passed and approved a petition for a thirty-mile vertical fibre brick pavement of the monolithic type of construction. The contracts for its construction will be let early in the spring.

FACE BRICK MAKERS *to* RALLY *at* FRENCH LICK

December 12, 13, *and* 14, *Chosen as the Dates Upon Which the Annual Meeting of the Association Will Be Held*

AFTER CONSIDERING every available place at which to hold its annual meeting, the American Face Brick Association, thru its executive committee, has decided to return to French Lick, Ind.

A number of desirable locations for the convention were considered, in addition to French Lick, and the advantages of each were carefully gone over by the committee. The objection to some of these places was that they would be too crowded when the association meets in annual session. Travel is becoming especially heavy, due no doubt to the nation's unprecedented activity in many lines of industry because of the war. Hotels in every important city seem to be well filled, and in many instances crowded. Word comes that last winter's dearth of accommodations in New York City, for instance, bids fair to be duplicated in the coming four or five months. So, to meet in any large city would subject the members of the association and their friends to untold inconvenience.

Again, the objection to other locations was the matter of expense. Suppose White Sulphur Springs, Va., was considered. Taking Pittsburgh as a typical point of origin, or as a central point for the face brick industry, it would mean considerable expense to attend a convention at White Sulphur Springs. This point is also a good distance from New York City and is very inconvenient for western manufacturers and dealers. For everyone to spend more than is necessary to attend the convention would not be in keeping with the spirit of economy which seems to be so desirable in these war times.

French Lick was chosen because it is fairly convenient for all concerned and is, no doubt, the most economical place to go. The rates for convention guests will be $6 per day for one, and $10 where two occupy one room. Since the French Lick Springs Hotel is operated on the American plan, this means a decided saving, with good food and comfortable accommodations assured. Reservations should be made thru Secretary-Treasurer R. D. T. Hollowell, Fulton Building, Pittsburgh, without delay.

December 12, 13, and 14 have been chosen as the dates upon which the meeting will be held. There will be one session on the afternoon of the twelfth and one each on the morning of the thirteenth and fourteenth. The program will be devoted to a full discussion of the promotion plan, the details of which were presented in the September 25 issue of *Brick and Clay Record.* Also, war taxes, standards, especially sizes, and terminology, besides the regular reports of the officers and committees will be taken up. Trade acceptances will also receive some attention from the face brick makers.

There certainly is no good reason for neglecting to gather together in trade conventions this year. President Wilson has made himself very clear on this subject. In fact, there is every reason why we should have bigger and more valuable meetings during the present national crisis than ever before. Serious problems confront the industry on every hand, and the face brick industry is not free from them. So make your arrangements now, Mr. Face Brick Manufacturer, to be present at the French Lick meeting. The restful atmosphere of French Lick will be a welcome tonic to your harassed soul and meeting with your fellow manufacturers is bound to be productive of great good.

Do not forget the dates—December 12, 13, and 14—French Lick Springs Hotel, French Lick, Ind. A complete guide to railroad routes and connections will be published in next issue of *Brick and Clay Record,* as well as a more detailed account of the plans in view. Make preparations to attend now.

DEALERS TO MEET ON SAME DAYS

Since this action was taken by the America Face Brick Association, the executive committee of the Face Brick Dealers' Association of America has decided to hold the annual meeting of that association at French Lick on the same dates as the meeting of the American Face Brick Association is held, according to Harold W. Holmes, secretary.

The Beautiful French Lick Springs Hotel as Seen from the Golf Links.

Canadian Convention Plans Forming

Plans for making the Sixteenth Annual Convention of the Canadian National Clay Products Association, to be held at the Prince George Hotel, Toronto, Ont., Canada, January 29, 30 and 31, 1918, singularly successful are slowly assuming definite form.

According to an announcement just received from Gordon C. Keith the aggressive secretary of the Canadian organization, the following are some of those who will take part in the coming gathering: N. B. Davis, ceramic engineer, Kingston; Jas. McCabe, Frontenac Brick and Tile Co., Kingston; W. G. Worcester, Calgary, secretary of the Alberta Clay Products Manufacturers Association; R. H. McElroy, Dayton, Ohio; Angus German, Toronto; Joseph Keele, chief engineer, ceramic branch Ottawa; a member of the Workmen's Compensation Board, Toronto, and Professor Day, Ontario Agricultural College.

Refractories Hit By Shortage of Coal

Production of refractories is being seriously curtailed owing to a shortage of coal. This has compelled some plants to close down temporarily, and others to work far below normal. The shortage is partially due to priority shipments and to a lack of cars, which gradually is becoming worse. Manufacturers are making every possible effort to meet the requirements of the steel industry and are meeting with considerable success, altho the fuel situation is causing grave concern. It is particularly disturbing because some of the consumers are engaged on war contracts.

Fire Clay Brick (First Quality)	
Pennsylvania	$45.00 to $55.00
Missouri-Illinois	55.00 to 65.00
Ohio	45.00 to 50.00
Kentucky	45.00 to 55.00
New England	55.00 to 65.00

Fire Clay Brick (Second Quality)	
Pennsylvania	$40.00 to $50.00
Ohio	37.00 to 40.00
New England	48.00 to 58.00

Silica Brick	
Pennsylvania	$50.00 to $60.00
Chicago	55.00 to 65.50
Birmingham	45.00 to 55.00

Magnesia Brick (Per Net Ton)	
9x4½x2½	$135.00 to $160.00

Chrome Brick (Per Net Ton)	
9x4½x2½	$125.00 to $135.00

Bauxite Brick (Per Net Ton)	
55 per cent	$ 40.00 base
76 per cent	100.00 base

The government recently has closed for a refractories tonnage, involving only a small lot, states the "Iron Trade Review," and paid the prices which are prevailing in the open market. These prices remain unchanged and have not been revised since last May, despite the tremendous increases that have been made in the prices of commodities of most every description. This is one reason for believing that the government will not fix levels on refractories. It is evident that, in view of the heavy demands that have been made and are being made for refractories, that producers could have increased prices and had no difficulty in obtaining the figures they might have chosen to name. The industry felt, however, that it was preferable to permit the market to continue with normal prices and hence no changes have been made during the last half of the year.

WHAT IS NON-ESSENTIAL BUSINESS?

BUSINESS MEN EVERYWHERE, according to a war bulletin issued by the committee of the Chamber of Commerce of the United States co-operating with the Council of National Defense, are wondering what is non-essential business. The committee, it is said, is receiving many inquiries as to the manner in which this will be determined by the government and what course will be followed in withdrawing labor and materials from such industries as may be regarded as non-essential during the war for the necessities of industries essential to the war. No policy in this connection has been announced by the government and according to the committee the above questions cannot be answered.

"When the occasion arises, what should be done seems clear to this committee," said Waddill Catchings, of New York, its chairman. "No action except emergency action should be taken, except in accordance with some general plan based upon a thoro survey of industry, which, no doubt, has already been made.

"If unnecessary hardship is to be avoided; if there is to be no discrimination, the government should not act until a general plan has been formulated and made known to the business of the country."

Before a business is classified as non-essential and deprived by act of government of labor and material, according to the National Chamber bulletin, the industry thru duly elected representatives should be given an opportunity to discuss the matter; to learn the reasons for action.

"The motive of the government—the concentration of industrial energy toward winning the war—appeals to all," the bulletin goes on, "and every industry can be relied upon to assist in bringing itself into adjustment with war needs.

"As has been frequently pointed out by the committee, if the government acts in this connection with sufficient dispatch, the industries of the country may be given an opportunity to meet the needs of the emergency in a gradual manner and after deliberate planning. With English experience as a guide and with the unhesitating support which business has given to the government in the national effort, full opportunity is afforded for deliberate planning and adjustment."

AVOIDING UNNECESSARY HARDSHIP

Where an industry is regarded as non-essential and must be deprived of labor and materials, it is pointed out such deliberate planning may lead to the use of substitute materials or different processes of production. In this manner, unnecessary hardship may be avoided.

It should be a cardinal principle that the normal structure of business should be maintained during these abnormal times as far as possible. Therefore, consideration should be given to the possibility of allowing non-essential business a proportion of its requirements of labor and materials, so that some organizations may be retained to be developed again upon the return of peaceful conditions.

Furthermore, the bulletin goes on, when the government is forced to deprive a business of materials and labor because it is non-essential, an effort should be made by the government to place with the industry orders for product needed in the war. In this manner a helping hand may be given to business suffering solely thru sacrifice for the common good.

In this same connection, it may be said that if men are to be withdrawn from industrial communities where they have houses and gathered in manufacturing centers already congested, there is created a great housing problem in connection with the production of war supplies. But if in placing the war orders effort is made to produce war supplies in the centers where labor is housed, the bulletin continues, not only will congestion in munition centers be relieved, but there will be avoided at the end of the war the great problem of moving labor back to the normal producing centers.

"One of the reasons for suggesting the formation of War Service Committees in industries," the bulletin concludes, "was to bring about an early consideration of the above problems and to direct the attention of industries to the need in these abnormal times of preparing for diversified or unusual production to keep the industries intact during the war. Such committees could effectively present to governmental authorities the manner in which those industries might well conform to war-time conditions. In a democracy it is certainly far better for industries to become adjusted to new conditions by co-operation between the industries and the government rather than by compulsion of drastic action.

COAL SITUATION APPEARS GRAVE

THE OUTSTANDING FEATURE of the coal situation is that, despite emergency measures adopted by the federal authorities and the coal men themselves to speed up production and distribution, the present rate of output falls short of overtopping the insistent demands that come from both the steam and domestic consumers. From the standpoint of production, labor and transportation continue to be the most vital factors that enter into the situation. Transportation, of course, has a primary bearing upon the question of distribution, but the last named phase of the coal situation is further complicated by the requirements, both direct and indirect, for the federal government in the prosecution of the war and by the demands made upon the coal men for special consideration by the various state and local fuel administrative boards.

Superficially speaking, the labor situation, with the exception of the Southwestern district (Arkansas, Missouri, Kansas, and Oklahoma), where the rank and file are still openly bitter against the imposition of a penalty clause in working agreements to prevent unnecessary retardation in the rate of production, shows a great improvement over the situation existing a month back when the Central West was in the throes of a disastrous strike that was settled only by threats from United States Fuel Administrator Garfield. Under the surface, however, the outlook is not as cheerful.

Actual shortage in labor has been a fact in the East for nearly two years; it is a condition that is causing grave concern in the West as the days go by. The most dangerous situation to be faced, however, is that of discipline. The number of unauthorized strikes within the past six months strongly suggests what few care to publicly admit—that the leaders of the mine-workers have lost or are losing control over the men. The only hope that may be set off against this is that the national administration will continue to insist, in no uncertain terms, that there shall be no shirkers or slackers among the laboring elements engaged in essential industries.

TRANSPORTATION GAINS OFFSET BY INCREASED DEMAND

Some gains in the transportation system have already been won by the enforcement of the order limiting the use of open-top equipment, issued by the Priority Board several days ago. The pooling of coal at tidewater and on the Great Lakes has also permitted a greater utilization of exisiting transportation facilities in the carriage of coal. These gains, however, can not wholly offset the rising tide of traffic in other directions nor settle the grave question of the sufficiency of the motive power available for haulage. As the winter season progresses there is bound to be a reduction in the efficiency of the national transportation plant that no efforts that might be put forth can overcome.

While the pooling of coal has conserved railroad equipment and has been of untold benefit to the Northwestern States that are so largely dependent upon the East for their fuel supplies, it has operated to upset the general balance of distribution in Ohio, Indiana, and Illinois. With the carriers giving lake cargo coal preferential movement, Ohio, Michigan, and Indiana have found the tonnages available from customary sources of supply materially cut down. The result has been to throw an unusual burden upon mines in Illinois and Indiana. In addition, the Northwest, particularly Wisconsin, Minnesota, and northern Iowa, have been calling upon the mines of Illionis and Indiana to a greater extent than in past years, while the scarcity of all rail shipments of eastern coals to Chicago and points West has served to further increase the demands made upon those mines.

The balance of distribution in the Middle West is still further disturbed by the increasing demands for fuel for war purposes from industries in that section of the country. These demands, of course, are of such character as admits of no delay. Moreover, the government itself is requisitioning coal for cantonments, arsenals and similar uses. Shipments are made at the expense of the general buyer. At the present time, it does not appear that there will be enough coal to go around. The authorities at Washington today estimate that the shortage will be 50,000,000 tons—and this despite the fact that the production for the current year will be the greatest in the history of the coal industry.

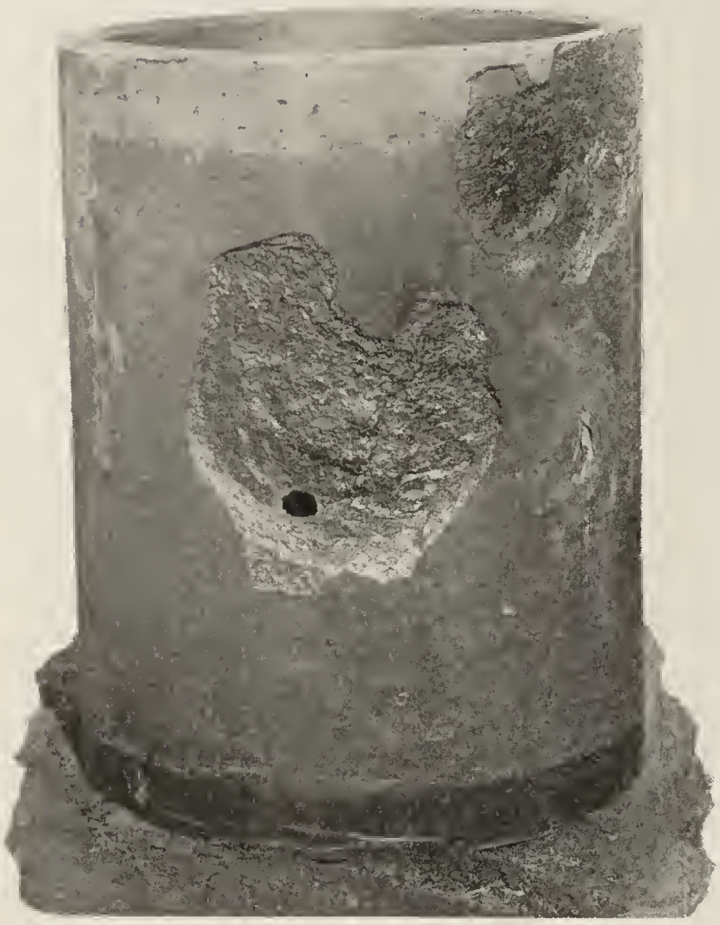
Under such conditions as pictured in the foregoing paragraphs, the matter of price is not even of secondary importance. At the same time, this much may be said: Common expectation is that any further readjustments made by the authorities will be upward revisions. That, with a single exception, has been the outcome of every change authorized since President Wilson first announced his tentative scale last August. While labor has been well taken care of in the advances that became effective October 29, it is well known that the producers in many districts are not satisfied with the existing maxima and are actively pressing their claims for increased selling prices.

Prominent Ohio Paving Brick Maker Dies

John Kline, of the John Kline Brick Co., Wickliffe, a pioneer in the paving brick industry in northern Ohio, died on November 17 at this home in Wickliffe. Mr. Kline leaves two stalwart sons, J. C. and A. B. Kline, both of whom are well known among paving brick makers, one being in charge of the sales and the other superintending manufacturing operations of the John Kline Brick Co.

The funeral was held on Monday, November 19, the day on which the Fourteenth Annual Meeting of the National Paving Brick Manufacturers' Association, in which both Mr. Kline and his two sons have at all times been actively interested, convened.

VITRIFICATION *and* WATERSMOKING SLABBING *in* DRAIN TILE *and* SEWER PIPE


This is a Case of Watersmoking Slabbing, According to the Author of this Article, and is Caused by Too Rapid an Increase in Temperature During the Early Stages of the Burn. The Slab Completely Separates from the Body of the Ware.

It Has Long Been Accepted as Axiomatic That Slabbing in Drain Tile and in Sewer Pipe Could Be Traced in Every Case to But One Cause—Faulty Watersmoking. In the Following Able Article, the Superintendent of One of the Largest Plants in the Middle West, Who Prefers to Remain Incognito, Advances a New Thought, and Contends That this Trouble May Arise During the Vitrification Period. Read How He Discovered It—and Then Eliminated His Trouble.

MUCH HAS BEEN WRITTEN from time to time on the subject of slabbing or spalling, which occurs so frequently in the manufacture of large drain tile and sewer pipe. In practically all that has been published, however, this defect has been traced to the same source, and to only that one source—faulty watersmoking.

While it is not my intention to criticise any of the articles written on this subject, nor to refute the points brought out in them, I do want to call attention to one possible source of the trouble which seems to have been entirely overlooked in the past. The experience of former writers in manufacturing this class of ware may not have lead them to draw the same conclusions which I have arrived at, and which I will explain in detail in this article; but I know of two specific cases in my own experience where, altho all of the slabbing trouble was claimed to be directly caused by too rapid watersmoking, it was not eliminated by a more careful procedure in this part of the burn. The duration of the watersmoking period was considerably lengthened, but slabbed ware was still found.

The charge of carelessness in attending to his watersmoking fires was then made against the burner in an endeavor to fix the blame for continued slabbing. When the burner satisfactorily proved that he had attended to his fires in the proper manner, it fell to the lot of the night burner, not on the job to defend himself, to be the "goat." I happened to be the "goat' in one instance but I know now as I did then that the slabbing was not due in any measure to carelessness in watersmoking. I do not by any means contend that it is impossible to slab pipe in the watersmoking period; what I do want to emphasize is that there are many cases of slabbing where the trouble is traceable to some other source.

TWO DISTINCT TYPES OF SLABBING

In my mind there are two distinct kinds of slabbing, which I will designate, first, as the ordinary watersmoking slabbing, with which we are all familiar, and second, as vitrification slabbing.

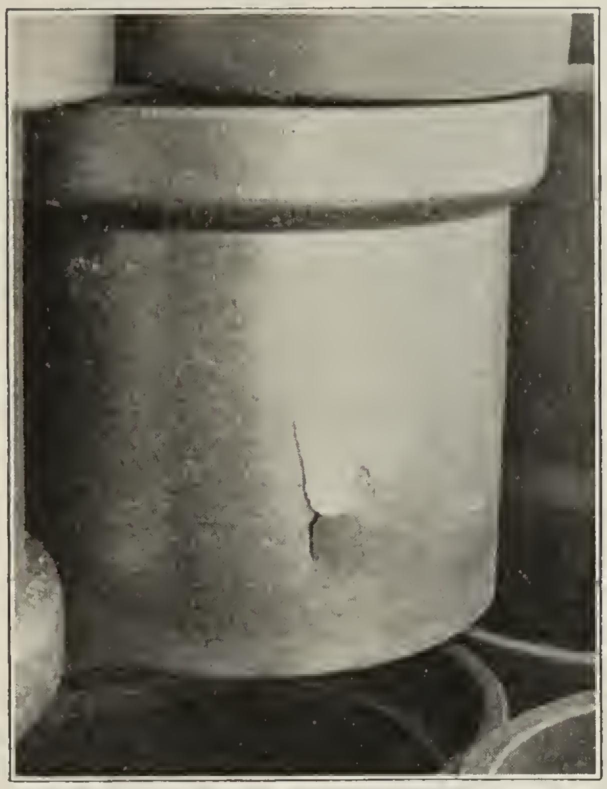
The cause of watersmoking slabbing is due to too rapid a rise in temperature in the early stages of burning. The remedy is obvious. But the point should be emphasized now that no burner should attempt to watersmoke a kiln of large tile or pipe without some means of definitely knowing the temperature of the kilns. This is especially true if the ware is hard to bring thru this stage safely. I have fired kilns where the watersmoking was done with one or two small chunks of coal placed in the fire box every one and one-half hours to hold the temperature at 200 deg. Fahr. At another time I have fired one big shovelful of coal every three-quarters of an hour to accomplish the same result. This difference in firing was of course due to weather conditions but it shows that guess work is dangerous. Some means of knowing the actual temperature in the kilns is required. A mercurial thermometer registering up to 500 deg. Fahr. is an inexpensive instrument and one which will guide the burner savely thru the watersmoking period.

VITRIFICATION SLABS

Slabs formed during watersmoking are found lying on the floor of the kiln or leaning up against the stand of pipe adjacent to that from which they came. They are always completely detached from the pipe and as a rule go much deeper into the body of the ware than does the vitrification slab.

What I have designated as vitrification slabs are those which are least understood and which I have found in my experience to be often confused with watersmoking slabs. However, upon close examination the two types of slabs permit of an easy identification. In the case of vitrification slabbing, we have an entirely different set of conditions to deal with than in the case of the watersmoking slabbing, the causes and effects are pronouncedly dissimilar. We are all of us more or less familiar with the subject of lamination. Especially if we are interested in the manufacture of paving and building brick have we studied the problem carefully and endeavored in many ways to minimize it.

This subject has been given but very little attention in the past by makers of large drain tile and sewer pipe, however, despite the fact that it is today a hoodoo which is keeping many manufacturers out of the big pipe and tile game. I know of many instances where the manufacture of large tile has been discontinued, solely for the reason that the loss suffered from slabbing was too enormous to make the manufacture of this ware profitable—slabbing which might have been eliminated by overcoming, in so far as possible, the lamination in the pipe and tile. It is this subject of lamination that we have got to deal with in seeking the remedy for our vitrification slabs.



This, States the Author, is a Good Example of a Vitrification Slab, Formed During the Last Stages of the Burn. Vitrification Slabs Seldom Separate from the Ware.

CHARACTER AND CAUSE OF VITRIFICATION SLABS

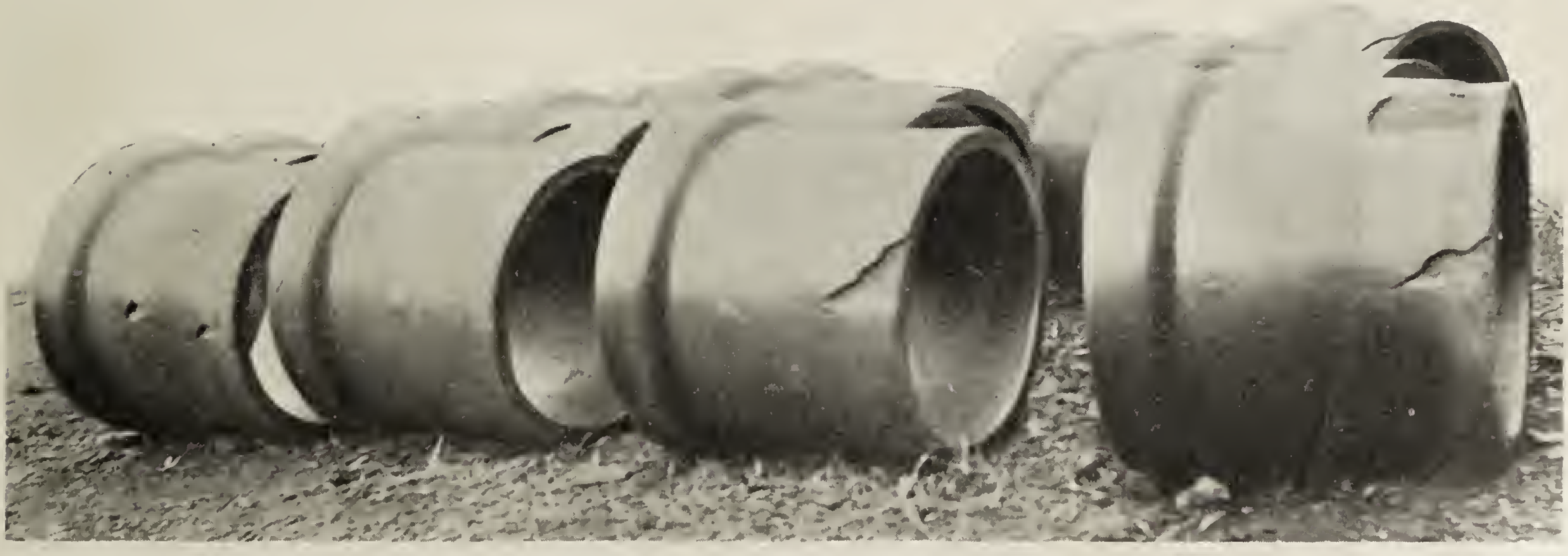
Vitrification slabs are formed during the last stages of the burn and will as a rule start in the shape of a wedge with the apex sometimes pointing up and sometimes down. They will peel off for a distance of from six to eighteen inches or until they reach the end of the laminated plane along which they are traveling. Sometimes the slab will barely get started before it reaches the end of the lamination and in this case there will be only a small piece just starting to lift off the tile. Seldom does the vitrification slab detach itself entirely from the pipe.

The cause for vitrification slabbing may be explained as follows: When vitrification begins the shrinkage which accompanies it affects the thin layers of clay that are formed on the outer surface of the pipe before it reaches the main body. The difference in contraction or shrinkage allows the thin layers to break loose where the end of the laminated plane meets the surface, and, as the ware at this stage of the burn is very soft, the loosened piece will, by its own weight, unroll or perhaps I should say roll itself from the body of the pipe. I have seen these vitrification slabs when they resembled the curled-up shavings of th carpenter's plane.

The fact that the vitrification slab adheres to the body of the pipe is to my mind, sufficient proof that it is not due to faulty watersmoking. I have seen tile after tile set in kilns bone dry and all slabs on these pipe were of the nature described as vitrification slabs. On the other hand, green tile of the same size, when slabbed in the same kiln, were of the nature described as watersmoking slabs.

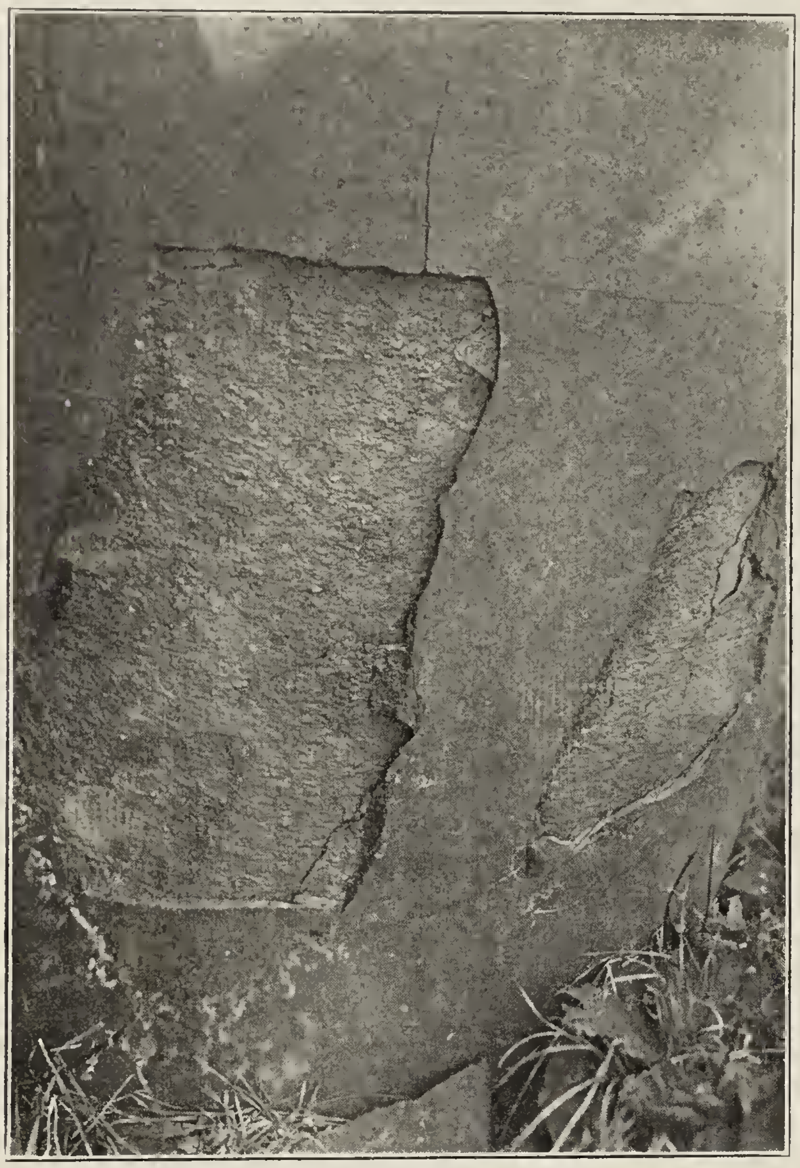
When we stop to consider the nature of a pipe that is set in the kiln in a bone dry condition and carried along at a temperature not to exceed 212 deg. Fahr. for from thirty-six to forty-eight hours, it is hard to imagine a slab separating from the body of the pipe during that period and remain adhering to the body.

At one of the plants with which I was connected, our slabbing was of such an aggravated nature that the manager of the plant suggested that I burn the kiln of tile so that the ware would be of the hardness of flue lining. It was with



The General Appearance of the Slabs Shown on the Pipe in the Above Picture Indicates that They are of the Type Described as Watersmoking Slabs.

this kiln that we obtained the key to a solution of our problem. The kiln contained 28-inch drain tile and, when drawn, there were not more than one-half dozen slabbed pieces. Those tile that had slabbed were directly in front of the fire where they received the most severe heat. Very little shrinkage had taken place in any of the tile. Previous to this burn fully fifty per cent. of our 28-inch tile had slabbed.



Altho the Slabs Have Become Detached from this Pipe, It Is Easily Seen that They Followed a Definite Plane of Lamination, Which was Opened Not in the Watersmoking Period, but in the Last Stages of the Burn.

Following up the clue that fortune had placed in our hands we next took a kiln of 36-inch tile which had always slabbed as badly as the 28-inch tile, and proceeded with this kiln in the following manner: The tile were as dry as it was possible to get them under ordinary sewer pipe dryer conditions. They were watersmoked for sixty hours, the first twenty-four hours being utilized to bring the temperature up to 200 deg. Fahr. The remaining thirty-six hours were used in holding the temperature constant at this point. The kiln was then allowed to cool down and the tile were carefully examined for any sign of slabbing; but none could be detected.

The subject commenced to savor of more interest. It appeared as tho our efforts in overcoming slabbing in the past had been spent in the wrong direction, altho we had never heard of any other cause for slabbed pipe than that of faulty watersmoking. The kiln was again sealed and the fires relighted and the same watersmoking treatment given as before. The heat was then increased and as soon as the soot in the kiln had disappeared the night crew paid quarter-hour visits to the top of the kiln, closely watching developments from the holes in the crown. The day burners followed the same procedure.

SLABS VISIBLE AT VITRIFICATION TEMPERATURE

The night before the kiln was finished the night crew discovered that slabs were visible. I regret that we had no pyrometer on the kiln but, on a guess, I would say that the temperature was between 1850 and 1900 deg. Fahr., or just about the temperature at which vitrification takes place in our ware. This same procedure was followed on several other kilns. Care was taken in setting these kilns so that stands of large ware were so placed that the sides of the pipe could be more easily seen from the vents in the kiln crown than had been possible in the kiln of 36-inch tile. The results obtained were the same in each case. No slabs were detected until vitrification had started.

During these experiments some of our ware was set green with the result that some watersmoking slabs were obtained: but the difference in the appearance and behavior of watersmoking and vitrification slabs was readily apparent.

The ware in the molding room was examined more closely than before and the lamination running thru it could be very easily seen. To overcome this lamination we used grog in varying amounts for different sizes of pipe. It was not all done in a day, or in a week, but eventually we determined the right amount of grog for each size of pipe. Slabbing has almost entirely disappeared, and with those isolated cases which do occur we can usually determine the cause to be from a mill of clay which has been overlooked by our grog men.

On September 25, just about two months ago, I noticed a pipe on the truck that showed plainly by the smoothness of the surface and the finish that it was shy of grog. I allowed the pipe to be set in the kiln but before it was set in its place I scratched the word "slabbed" on the inside. When the burn was completed and the ware drawn (October 9) I noticed that my marked piece had slabbed.

Our grog is ground and passed over a 4-mesh screen. No attempt was made to eliminate the very fine material. To the large tile, that is, from 26-inch up to 36-inch, we add approximately ten per cent. by weight of grog. A small amount does not seem to have any material effect on the slabbing behavior of the tile. Of course, each plant must ascertain the proper amount of grog to be used for its clay—there is no rubber stamp rule that will apply in every case.

The function of the grog is that of a multitude of small anchors which keep raw clay from slipping on itself. It lessens, if not entirely eliminates, pronounced lamination planes. It also permits faster and safer drying and watersmoking, due to the fact that the structure is somewhat more porous, giving the water easier access to the surface. We are convinced, by numerous tests which we have conducted, that the strength of the ware is not lessened by grog.

* * *

Capital Clay Co. Opens Branch Office

Expansion in the business of the Capital Clay Co., of Des Moines, Iowa, is reflected in the recent opening of a branch sales office in Davenport. It will be remembered that this company was organized last February with a capital stock of $300,000, with J. L. Buckley, former manager of the Davenport branch of the Hydraulic-Press Brick Co., as its secretary, treasurer and general manager.

At the time of its organization it took over the large paving brick plant of the Barber Asphalt Paving Co., at Des Moines, and divided it into two sections, one of which it turned over to the manufacture of building brick and the other to the production of hollow building tile and fire brick. The manufacture of paving brick was discontinued entirely. The company's first branch office will be located in the First National Bank Building, at Davenport.

PROPERTIES *and* USES *of* REFRACTORY MATERIALS

This Article Deals Mainly With the Properties of the Constituents of Refactory Materials, and the Adaption of those Materials to Various Metallurgical Operations

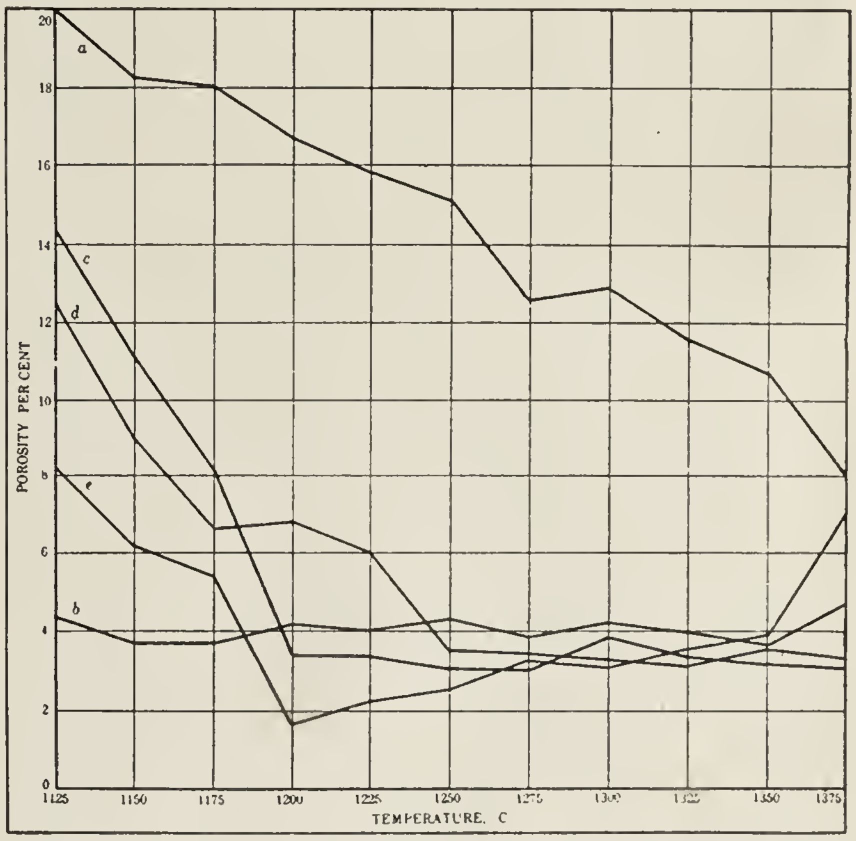
By A. V. Bleininger

Chief Ceramist, U. S. Bureau of Standards. This Paper Was Presented Before the Engineers' Society of Western Pennsylvania, and Appeared In a Recent Issue of the "Iron Trade Review."

REFRACTORY materials are indispensable in the practice of the metallurgical arts, in the melting of glass, the clinkering of cement, in the ceramic firing process, and last but not least in the generation of steam. According to the temperatures required and the particular conditions of each kind of use, a considerable number of materials are available. The principal types are the clay, silica, magnesite and aluminous refractories. In addition, special refractory materials find more restricted application, such as the carbon materials, carborundum, zirconium oxide and others.

For the sake of convenience three kinds of clay materials may be recognized in this connection, called for convenience, No. 1, No. 2 and No. 3 refractories. The greatest heat resistance is shown by those clays corresponding most closely to the theoretical kaolinite composition, 46.3 per cent. silica, 39.8 per cent. alumina and 13.9 per cent. chemical water, which upon heating becomes 53.8 per cent. silica and 46.2 per cent. alumina, and by the so-called bauxitic clays. The latter are admixed with some bauxite which may raise the alumina content as high as 60 per cent. (in the hydrous state). The increased amount of alumina brings about a decided increase in the refractoriness of the material. Clay of the purest type possible, kaolinite, has a softening temperature corresponding to the melting point of platinum, 1,755 degrees Cent., or expressed in standard pyrometric cones, to cone No. 35. Owing to the greater or smaller amount of impurities such as silica in the form of quartz, feldspar, lime and magnesia, this softening temperature is hardly ever realized. A softening temperature of 1,725 degrees Cent. is about as high as is reached by high class fire clays, such as the flint clays. Clays containing bauxite may soften at temperatures as high as 1,800 degree Cent. A high grade or No. 1 fire clay should not soften below cone No. 31 or approximately 1,685 degrees Cent. This point, therefore, would be about the dividing line between No. 1 and No. 2 fire clays, tho others place the limit considerably lower. The division line between the No. 2 and the No. 3 clay refractories would be at cone 28 or roughly 1,635 degrees Cent. Clays softening below this limit might be classed as No. 3 refractories. Altho this arbitrary classification may be considered too exacting by some, it has worked out quite satisfactorily in a clay testing practice extending over a number of years.

Fire clays may also be divided into two types of clays according to whether they are plastic and dense burning at comparatively low temperature, say, around 1,200 degrees Cent., or whether they are open burning, that is, retain their porosity within this temperature region. The clays of the second class are also, as a rule, less plastic than those of the first. The characteristic behavior of the denser burning clays is due, of course, to their higher content of fluxes.



The Porosities Resulting from Burning at Different Temperatures. Four Dense and One Open Burning Clays are Plotted on the Above Curves.

CHARACTERISTICS OF CLAYS

In the temperature-porosity diagram, Fig. 1, clay *"a"* is of the open burning variety, while the remainder are of the dense burning class. It happens that this diagram represents five well known European fire clays, of which several have been imported to this country in considerable quantities. In this series clay *"a"* is the famous glass pot clay from Gross Almerode, Germany, clay *"b"*, a very plastic crucible clay from Klingenberg, Germany; clay *"c"*, a glass pot clay from Kaschkau-Mehren, Germany; clay *"d"*, an excellent glass pot clay from St. Loupe, France, and clay *"e"*, a plastic fire clay from Breitscheid, Germany.

Siliceous fire clays, that is clays with a silica content above 75 per cent., possess a lower softening temperature than the highest grade fire clays and are influenced more potently by the presence of fluxes. It is more important that a siliceous fire clay be low in the basic constituents, iron oxide, lime, magnesia, potash and soda than an aluminous one since the lowering of the softening point is more marked. On the other hand, siliceous clays have a decided advantage over the average clay fire brick in that they are not subject to shrinkage in use and are able to carry considerable loads at furnace temperatures without showing any appreciable deformation. They are able to stand up well at temperatures not far removed from their ultimate softening point, while clay fire brick cannot be safely carried to temperatures within 100 degrees Cent. below the deformation point. At the same time, clay fire brick show considerable contraction and soften sufficiently even at temperature as low as 1,400 to 1,450 degrees Cent. to render them unable to carry loads greater than 10 pounds per square inch. This statement needs to be modified, however, in that high clay fire brick may be manufactured by the use of highly calcined No. 1 clay (grog) and by high burning of the material so that the contraction is very small and the load carrying power quite high. In doing this, the contraction of part of the clay is practically completed in the calcination and in the burning of the brick so that but a small shrinkage can take place later. At the same time the compact structure is able to resist the usual pressure conditions in furnaces satisfactorily. Such a process of manufacture is expensive. All non-siliceous clays tend to shrink in burning, due in part to the colloidal contraction and in part to the effect of the fluxes which are active in lowering the viscosity of the clay, thus bringing about a gradual liquefaction. In siliceous clays this shrinkage is practically eliminated not only on account of the much smaller amount of clay substance present, but also on account of the volume increase of the quartz in its transformation to cristobalite and tridymite. This volume change may be great enough to cause expansion of the brick upon burning rather than contraction. The high silica content, however, brings with it certain disadvantages such as inability to withstand sudden temperature changes which does not apply to clay bricks.

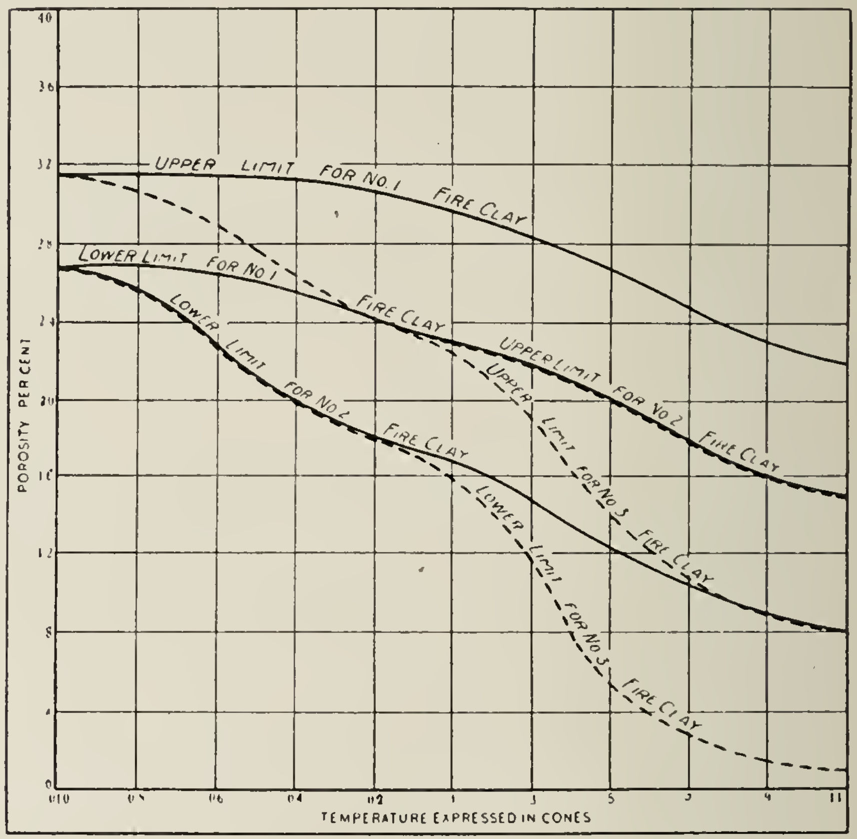
In the manufacture of clay fire bricks two kinds of materials are to be recognized, those made from one, more or less homogeneous clay and those produced from a mixture consisting of a large part of a very refractory hard clay, deficient in plasticity, bonded together by a less refractory but very plastic one which makes possible the molding of the tempered mass. The second case applies to the Pennsylvania fire bricks, in which the ground flint clay is cemented together by a plastic material. It is to be regretted that occasionally the plastic clay is so deficient in refractoriness that it seriously lowers the quality of the product, thus spoiling the effect of the high grade flint clay.

IMPORTANCE OF HARD BURNING

The value of the hard burning of fire brick needs also be emphasized. There is no doubt but that clay refractories fired to as high a temperature as possible are greatly to be preferred to underburned material, no matter how this may affect the looks of the product. Those who prefer soft burned brick usually can give no adequate reason for their position.

Silica refractories are principally produced from a mixture of ground quartzite and lime paste so that in the fired product the silica content may be from 94 to 97 per cent., and that of the lime about 2 per cent. The firing of the dried brick is carried to quite a high temperature, usually to above 1,500 degrees Cent. In the burning, the lime bond develops to form a mono-calcium silicate and the quartz is transformed to cristobalite, an intermediate crystalline modification of silica. It has been shown by Kenneth Seaver that in industrial practice the transformation of the quartz to cristobalite is practically as complete as is possible. This transformation is coincident with the expansion of the brick, usually ⅜-inch to 7/16-inch per linear foot over the mold measurements.

The use of bauxite and mixtures of bauxite and fire clay is assuming larger proportions than it has in the past. This is particularly true at the present time when due to the scarcity of magnesite, a substittue for the latter is being sought. From accounts which have been obtained it seems that it is possible to use refractories of this type successfully for purposes where magnesite seemed indispensable. The hydrous bauxite ores usually are impure, containing, as a rule, 5 to 6 or more per cent. of ferric oxide. This applies to most American bauxites. The melting point of pure alumina is about 2,049 degrees Cent., but that of bauxite does not, as a rule, exceed 1,820 degrees Cent. A very high shrinkage upon heating is characteristic of bauxites and hence it is important that as large a part of the material as possible be previously calcined. Unless this is done and the calcination carried to a high temperature the shrinkage of the product in use will be so high as to render it very unsatisfactory. Bauxite tends to contract also under pressure at furnace temperatures and hence is not so well adapted for uses where severe load conditions prevail. Owing to the feebly plastic nature of bauxite, brick consisting of calcined and raw bauxite are rarely made. Usually a good fire clay is employed to bond together the calcined bauxite. This naturally reduces the refractoriness of the mixture so that bauxite-clay fire brick do not, as a rule, possess a softening temperature above 1,800 degrees Cent. Brick of this type are sold on the basis of the alumina content.



This Chart Shows the Classification of Fire Clays Given by Purdy, According to Their Porosities When Burned to Different Temperatures.

Greater refractoriness can, of course, be reached by the use of refined bauxite from which a large part of the iron oxide has been eliminated by chemical treatment.

Alumina is also an important constituent of refractory porcelain such as is used for pyrometer tubes, the so-called Marquardt porcelain. Here a considerable amount of alumina, previously calcined together with some feldspar is introduced as the non-plastic portion of the mixture which in addition contains more feldspar and plastic kaolin. The fact might be mentioned that Marquardt porcelain of excellent quality has been produced by the Pittsburgh laboratory of the bureau of standards, covered both with a bright and a matt glaze.

MAGNESIA REFRACTORIES

The magnesite products represent typical basic refractories. Two kinds of magnesite are to be distinguished, rocks approaching pure magnesite in composition such as the Grecian and California materials and the impure ones, containing from 3 to 8 per cent. ferric oxide and more or less silica, of which the Austrian magnesite is characteristic. The melting point of pure magnesia is very high, about 2,800 degrees Cent., but that of magnesite brick rarely exceeds 2,170 degrees Cent.

TABLE I

DEFORMATION OF REFRACTORIES

No. of specimen	Load, per sq. inch	Contraction in per cent. of length at 1,300 deg. Cent.	at 1,350 deg. Cent.
1	50	1.06	......
1	40	1.06	3.46
1	25	0.35	2.48
1	15	......	1.03
1	0	0	0
2	50	2.17	......
2	40	2.17	3.26
2	25	0.72	1.81
2	15	......	1.45
2	0	0	0
3	50	3.83	......
3	40	3.11	4.82
3	25	1.73	3.50
3	15	......	3.44
3	0	0	10.07
4	50	1.03	......
4	40	0.70	3.86
4	25	0	2.41
4	15	......	1.41
4	0	0	0
5	50	1.80	......
5	40	1.08	3.26
5	25	1.08	2.89
5	15	......	1.08
5	0	......	......

Owing to the extreme heat resistance of the material and its great shrinkage, about 50 per cent., by volume, pure magnesite is not suitable for refractory purposes since it would be exceedingly difficult to reduce it to practically constant volume, while, owing to the fluxing action of the ferric oxide in the impure material, the latter is more easily compacted.

The calcination of the magnesite is very important and in Europe it is conducted in shaft kilns working with forced draft. Rotary kilns, would be well suited for this purpose. The dead burned magnesite, after having been crushed is then intimately mixed with some low burned magnesite, moistened with water and shaped into bricks under considerable pressure. The soft burned magnesite functions as the cementing material. The brick are then dried and burned in kilns to a high temperature. Magnesite brick, owing to their basic nature and high heat resisting quality form a valuable refractory. Magnesite is subject to certain limitations however in use, such as its tendency to spall when subjected to sudden temperature changes and its friable character under conditions of abrasion. The shortage of magnesite due to the European war conditions has made it necessary to look about for substitutes. In many cases bauxite materials have been found very satisfactory indeed and it has been reported from several sources that this material has been permanently adopted. Dolomite has also been used as a substitute For this purpose impure dolomite can only be used as it is necessary to "dead burn" the material as much as possible before attempting to make it either into bricks or to tamp furnace bottoms with it. A fairly high content of iron oxide is to be preferred as in the case of magnesite and the calcination temperature should be carried as high as possible. Attempts have been made also to coat the crushed dolomite with a pulverized slag suspension in water so that upon burning a protective coating would be formed on the surface. Unfortunately in several such cases the slag was decidedly basic and hence did not enter into intimate combination with the dolomite. A more acid slag would certainly be preferable for this purpose. The calcined dolomite, crushed to the desired fineness is then mixed with hot tar as soon as possible and molded into brick. These then must be burned again in order to remove the tar and bring about some consolidation of the particles. For tamping the tar likewise is used as the bonding material. Dolomite materials of this sort are invariably apt to slake upon standing in the air. In spite of this difficulty it has been used to a considerable extent in European practice for many years.

CARBON REFRACTORIES

Probably the best known application of carbon for refractory purposes is in graphite crucible, nozzles, etc. In these from 40 to 60 per cent. of graphite is introduced. A small amount of calcined clay (grog) is also used and the whole bonded together by means of a very plastic fire clay. The graphite comes from Ceylon and the bond clay generally employed for this purpose has been the Klingenberg clay, imported from Germany previous to the war. Difficulty is being experienced at the present time in securing the graphite and the importation of German clay is, of course, completely cut off. The supply of domestic graphite appears to be inadequate and its quality is said to be inferior to that from Ceylon. A shortage in graphite would make it necessary to resort to the use of artificial graphite, carborundum, gas carbon, electrode carbon or even ground coke. Coke brick and similar refractories have been used in Europe for many years and the use of this material might be extended to crucibles even though their life would be considerably shorter than that of the graphite product.

The elimination of the German bond clay is not a really serious matter, as it is quite possible to obtain similar results, not by the use of any single American clay, but by a mixture of two plastic fire clays, one of which is of the dense, the other of the open burning variety. By correct proportioning, the requirements of both brass and the steel melting should be satisfied. Such clays can be found among the so-called ball clays of Kentucky and Tennessee and the plastic fire clays of Pennsylvania, Missouri and Ohio.

For certain purposes carborundum-clay mixtures have been used but apparently with only indiffierent success.

Among the rarer and more costly refractories chromite is to be mentioned, employed as a neutral parting between acid and basic refractories. The melting point of the chrome product has been found by Kanolt to be near, 2,180 degrees Cent.

PURE MAGNESIA USED SPARINGLY

Pure magnesia fused in the electric furnace is sometimes used as a refractory for small installations, but its use becomes prohibitive in larger quantities due to the high cost of preparation. Refractory mixtures of this type are made up with as much as possible of the fused and a small amount of low burned or plastic magnesia which functions as a binder. Sometimes a small amount of magnesium chloride may be used to assist in cementing together the fused or sintered particles by virtue of a Sorel cement reaction. Crucibles of pure, fused magnesia have been made in Europe for some time and have been found useful for many purposes. The melting point of pure magnesia has been estimated by Kanolt to be 2,800 degrees Cent.

TABLE II
VALUES OF K

	Degrees Cent.						
Kind of fire brick	200	400	600	800	1,000	1,100	1,200
High clay	145	180	220	240	260	270	....
More silicious	115	140	165	190	215	....	....
Silicious	90	110	125	130	130	....	....
Silicious	210	245	270	270	270	270	270
Silica brick	135	160	170	170	180	210	240
Magnesite	110	115	120	130	140	140	....

Fused, pure alumina has been used extensively in the manufacture of small crucibles, tubes, furnace linings, cores for winding resistance, heating wires, etc. Its melting point is approximately 2,050 degrees Cent. (Kanolt). Altho admirably adapted to many uses, it has certain limitations such as its permeability to gases and the long temperature range below the melting point during which it tends to soften and deform.

One of the rarer, tho promising refractories is zirconium oxide, obtained from the Brazilian zircon earth which carries as high as 90 per cent. of the oxide, about 4 per cent. of ferric oxide and 6 and more per cent. of silica. Refractories have been made from this material, the bulk of which consist of the ZrO_2, previously fired to a high temperature, and zirconium hydroxide as a binder which may be supplemented by the use of starch. Such refractories have been found to show no sign of fusion at 2,300 degrees Cent. to be indifferent to temperature changes and to possess high di-electric strength even at high temperatures.

For certain purposes magnesia spinel may be found to be a useful refractory. It corresponds to the formula $MgO.Al_2O_3$ and is prepared by heating to a high temperature a thoroly blended mixture of 102 parts alumina and 40 of magnesium oxide. Altho this compound does not possess a very high melting point it is useful for certain purposes owing to its inertness to dissolving agencies and the absence of any tendency to corrode platinum or other metallic wires. It has been found a useful refractory in several metallurgical researches.

Boron nitride is a rarely used refractory and comparatively little is known concerning its behavior for the purposes under discussion here.

One of the fundamental properties of refractories is a melting or softening point sufficiently high that rigidity of the material is maintained under the temperature conditions involved. Comparatively few of the refractories possess a melting point in the proper sense of the word. Most of them show more or less a certain degree of softening during a given temperature range which may extend thruout several hundred degrees. Thus the rigidity of the substances decreases gradually and at the so-called softening point the viscosity has been diminished to such an extent that deformation takes place under the action of gravity. By molding test specimens in the form of small tetrahedra, corresponding to the shape of the well known pyrometric cones, a condition of softening is established which may serve for purposes of comparison. When the cone bends so that its apex touches the supporting plaque it is said to have gone down or "melted." The temperature at which this takes place is by no means a constant, but varies generally with the size and shape of the cone, the fineness of grinding of the material, the rate of heating and in the case of ferruginous materials, with the condition of the atmosphere, that is, whether reducing or oxidizing. Many basic mixtures made up in the form of cones do not deform in the manner described, but fuse into a round ball or drop. Such behavior is indicative of a real melting point. Owing to the fluctuations in the arbitrary softening point mentioned above it is a misleading practice to speak of the melting of clays and similar materials. It has been pointed out time and again that the standard Seger cones can be caused to deform at higher or lower temperatures according to whether they are heated rapidly or slowly. It is not uncommon to find, for instance, that such a cone may go down anywhere from 50 to 100 degrees Cent. below the temperature given in the tables by being heated slowly in a commercial furnace or kiln. It would be desirable therefore either to depend upon pyrometric measurements in connection with a definite rate of heating or to establish the real values of the cone softening points under the conditions of use by standardizing with the aid of a good pyrometer. It would be far better to state simply the number of the cone which has gone down under certain conditions than to make use of the "official" temperature given for the same number.

At the present time, electric carbon resistance furnaces are used most frequently for the determination of the softening points of refractories. In the case of refractories quite high in iron oxide erroneous results are obtained in such a furnace due to the reducing action of the carbon monoxide. In vacuum furnaces of this type or by the use of a current of inert gas thru the tube containing the specimens this difficulty may be diminished.

Again, by employing molybdenum or tungsten wire electric furnaces and maintaining constant conditions by causing a mixture of hydrogen and steam to flow thru the tube, according to the procedure of Fieldner and Hall of the U. S. bureau of mines very satisfactory results can be obtained. It might be stated, however, that such furnaces require skilled attendance and are limited as to the maximum temperature which may be reached. For temperatures up to about cone 32, satisfactory comparative results may be obtained by using a simple pot furnace, heated by means of a gas blast burner and by preheating the air used for combustion. The softening temperature of refractories may be determined by means of optical pyrometers, such as the Holborn-Kurlbaum or the Wanner or it may be estimated by means of the standard pyrometric cones.

Changes in volume due to the shrinkage or expansion of a refractory in use are obviously of considerable practical importance. Such changes are also indicative of the quality of the material. Thus a fire brick which shows a marked shrinkage in use is inferior in quality to a material which shows only a small change in volume. Excessive shrinkage of clay fire bricks is due either to insufficient firing or to inferior quality of the raw materials. Contrary to the opinion of some it is true that the harder a fire brick is burned the more satisfactory it is for most purposes.

Excessive shrinkage may be caused by the inferior refractory quality of the bricks so that upon heating them to higher temperatures more or less pronounced vitrification takes place accompanied by reduction of the pore space and general contraction. The contraction or decrease in porosity of a fire brick at different temperatures may thus be considered a valuable criterion of its quality and when plotted in the form of a curve and data enables us to judge the material quite accurately as to its refractory value. In fact, such information could serve as the basis of a classificaiton of fire clays, as has been suggested by R. C. Purdy, who proposed the diagram of Fig. 2 for this purpose. Altho the limits given by him do not agree with the facts known concerning fire clays at the present time his method of arriving at a basis of comparison for the grading of the various fire clays is thoroly sound. A study along this line in connection with the best known fire bricks of the United States is now being carried on by the bureau of standards. Based on similar reasoning, it has been proposed to test fire bricks by reheating them to several temperatures according to their grade and determining their linear contraction. Thus it has been suggested that No. 1 clay fire bricks should be heated to cone 14 (about 2,570 degrees Fahr.) and should show a linear contraction of not more than 2 per cent. Similarly No. 2 fire bricks should not contract more than 2 per cent. at cone 12 (2,462 degrees Fahr.) and No. 3 materials 2 per cent. at cone 8 (2,282 degrees Fahr.). English specifications for gas refractories require that the No. 1 grade shall not contract or expand more than 0.75 per cent., heated to cone 12 for two hours and the No. 2 grade not more than 1 per cent. under the same conditions.

Fire brick also undergo volume changes connected with deep seated molecular changes such as the dissociation of the clay substance into sillimanite at high temperature. The well known decrease in crushing strength suffered by clay refractories upon long heating has been shown by Mellor to be due in part to the growth of crystalline structure. Zoellner, in fact, was able to separate from high grade fire clays burned to a temperature corresponding to cone 15, from 2 to 22 per cent. of sillimanite by treatment with dilute hydrofluoric acid. However, the apparent volume changes accompanying these phenomena are slight compared with the contraction due to progressive vitrification.

In silica brick excessive expansion upon reheating is usually due to incomplete transformation of the quartz to cristobalite, a consequence of underburning. Some specifications like those of the American Gas Institute are very stringent with reference to this point and require that upon reheating to 1,500 degrees Cent., the permanent linear expansion shall not exceed 1 per cent. In the case of bauxite or magnesite bricks excessive contraction is likewise due to insufficient burning.

It has already been stated that with increasing temperature the viscosity of refractories decreases. The greater the amount of fluxes present the more marked is this degree of softening. It has been suggested therefore that the deformation at certain temperatures and under given loads be used as a criterion of the refractoriness of fire bricks. Recent work by the bureau of standards on the contraction of fire brick when reheated to 1,300 and 1,350 degrees Cent. under different loads has given the results shown in Table I.

It follows from these results that the softening of the brick becomes clearly manifest at 1,350 degrees Cent., which seems to be the more suitable temperature for this test. The load to be employed should not be greater than 40 pounds per square inch and not less than 25 pounds. The requirement as regards deformation must necessarily vary according to the particular use of the brick. For gas works refractories it has been proposed to specify for grade *"A"* clay fire brick a linear shrinkage not exceeding 2.5 per cent., the test being conducted at 1,350 degrees Cent. and with a load of 25 pounds per square inch. These specifications are exacting and can be met only by well burned fire brick of excellent refractoriness. The above results are in line with those obtained by Mellor in which he found that the deformation temperature of fire clays is reduced the more greater the pressure. The same investigator found the relation between the deformation temperature *"T"* and the load *"W"*, expressed in pounds per square inch to be expressed by the equation,

$$T = Ce - KW$$

where

C = deformation temperature of specimen of refractory material without load.

K = a constant, the numerical value of which depends upon the particular clay, mode of fabrication, etc.

e = exponential constant.

TABLE III
CONDUCTIVITY COEFFICIENTS

Substance	Thermal conductivity	Porosity, per cent. by volume
Fire brick	0.0030—0.0042	24—30
Bauxite	0.0031	41.5
Silica	0.0020—0.0031	42.0
Magnesia (1,300 degrees Cent.)	0.0065	41.0
Grecian magnesite	0.0071	31.5
Carborundum (1,300 deg. Cent.)	0.0145	30.6
Graphite (1,300 degrees Cent.)	0.0185	28.4
Chromite	0.0047—0.0069	21.3
Kieselgur	0.0018	58.0
Porcelain	0.0046	-----

The temperature may be expressed in degrees centigrade or in terms of Seger cones. The more silicious the clay, the less the difference between the deformation temperatures with or without load. On the other hand, the more the composition of a material approaches that of the pure clay substance the greater is the difference between the deformation temperatures with and without load. The "squatting" temperature of china clay is lowered approximately one cone for every increase of 5¼ pounds per square inch in load.

Silicious clay fire brick and silica bricks are best suited to withstand pressures at furnace temperatures inasmuch as they expand rather than contract and suffer practically no deformation. As far as silicious clays are concerned this holds only for materials low in fluxes. Clays of this type, high in iron oxide and other fluxes, may show decided and sudden contraction at temperatures of about 1,350 degrees Cent.

The structure and density of fire brick have some influence upon the resistance to load conditions. In flint clay fire brick the proper bonding of the grains is important. Hard burned bricks stand up better than soft fired material.

It is possible, however, to produce high clay fire brick showing excellent resistance to load conditions by using a mixture containing as high a percentage as possible of calcined No. 1 fire clay and a very refractory bond clay. Such bricks have been made under the direction of the writer and were found to possess an exceedingly small contraction with a load of 50 pounds per square inch and at temperatures of 1,350 to 1,400 degrees Cent.

Silica brick are most resistant to load conditions in furnaces, tho unfortunately they are subject to difficulties in resisting sudden temperature changes. Silica brick under a pressure of 50 pounds per square inch stand up at temperatures as high as 1,500 degrees Cent. Bauxite brick unless exceedingly well burned are apt to show decided contraction. Magnesite brick stand up well at temperatures as high as 1,550 degrees Cent. when they are liable to break down suddenly under loads of about 50 pounds per square inch. Chrome bricks resist this load up to temperatures of about 1,450 degrees Cent., when like the magnesite brick they are apt to fail suddenly.

RESISTANCE TO SUDDEN TEMPERATURE CHANGES

The quality of refractories to resist sudden heating and cooling is an important one and tests dealing with this qualification have been made for a long time by builders of coke ovens and erecting engineers specializing in steam boiler installations. The most common mode of testing consists in heating the fire brick to a red heat and then dropping them in cold water. The number of such quenchings withstood by the brick is considered a criterion of their value in this connection. Others heat the brick to a certain temperature, say 1,000 degrees Cent., and upon removal from the furnace cool them in the air by placing them on an iron plate, which may or may not be cooled by contact with running water. Again others heat the specimens to red heat, remove them and cool them on one side by means of a cold blast of air. It is thus seen that no uniform methods exist and that hence reliable comparisons are not available.

Several of the thermal properties of refractory materials are of considerable practical interest. It must be realized, however, in this connection that none of these properties are constant thruout the range of furnace temperatures. Like all physical constants they vary with temperature and in addition with the mode of manufacture, and such structural changes which are inevitable where refractories are heated for a long time. For instance, the coefficient of expansion of a clay fire brick, determined say between 0 and 100 degrees Cent. does not hold for higher temperatures. The same is true of thermal conductivity, specific heat and other properties. The mean co-efficient of expansion of fire brick is usually estimated to be 0.0000097, (referred to 1 degree Cent.).

Boeck has found the coefficient for a plastic fire clay, burned to cone 12, to vary as follows:

Temp. range, degrees, Cent.	First run	Second run
24 to 100	$1{,}316 \times 10^{-8}$	$1{,}310 \times 10^{-8}$
100 to 200	$1{,}710 \times 10^{-8}$	$1{,}610 \times 10^{-8}$
200 to 700	558×10^{-8}	580×10^{-8}
200 to 900	.... ----	567×10^{-8}

The specific heat of refractories has not yet been determined satisfactory for a number of such substances. For clay fire brick this relation has been expressed by Mellor by the equation:

$$S = 0.193 + 0.00006t$$

where

S = specific heat.

t = temperature, in degrees centigrade.

The thermal conductivity of the materials under discussion is a direct function of the porosity. Thus a dense brick showed at 1,400 degrees Fahr. a heat flow of 124 British thermal units thru 1 square foot area, 1-inch thick, per 24 hours, for a temperature difference of 1 degree Fahr. A somewhat more porous brick, under the same conditions conducted 87 and a "kieselgur" brick, extremely porous, 22 British thermal units.

The variation of the thermal conductivity of fire brick with temperature and reheating is illustrated by the work of Heyn which is compiled in Table II. Here the value of K represents the heat flow in calories per second thru 1 square centimeter and 1 centimeter thickness, per 1 degree Cent., temperature difference. The figures are of the order, $K = 0.001 = 100$.

According to the well known results of Wologdine the absolute thermal conductivity coefficients (gram calories per second, thru 1 square centimeter area and 1 centimeter thickness, for 1 degree Cent., temperature difference), have been found as given in Table III.

The values obtained for silica do not seem to correspond with the facts as they are known concerning commercial silica brick which have repeatedly been found to be better heat conductors than clay refractories. Our general knowledge concerning the thermal qualities of refractories is still decidedly deficient and is in need of much further work.

The molecular equivalents of silica are likewise obtained, that of alumina being equal to unity in all cases. Owing to the tedious nature and difficulties of silicate analysis it is evident that physical tests, the results of which are available in a short time, are preferable to chemical determinations.

In using refractories the quality of the mortar used is of great importance. In each case the mortar should approach very closely the composition and grade of the refractory. Highly refractory materials should be laid up with mortar of corresponding quality and with joints as thin as possible. The use, for instance, of a low grade fire clay in connection with high grade fire brick is bound to be injurious. Attention might be called also to the use of special mortars and cements for such purposes as securing impervious joints and protecting refractories from the infiltration of gases or corrosion of slags. Where, for instance, units are to be united to form a compact structure, porcelain cements containing feldspar or other non-corrosive fluxes may be very valuable. Again by coating brick work with a cheap, refractory glaze of the porcelain type impermeability to gases may be secured. By the use of a suitable silicate flux of the desired acidity, it may also be possible to protect refractory surfaces from corrosion by slags or glass.

Big Building Show Gets Under Way

Now, altogether—clay products, cement, lumber, and every other building material—let's drop the animosities of the past and weld ourselves into one harmonious whole to defeat the hodoo which has seized the American building market since the advent of war. Only in unity will we find the strength to do it; the popular misconception that prices will hit the downward grade when the guns cease to roar is a mighty obstacle to our success, and the only avenue open to us for overcoming that obstacle is to *advertise* and by so doing let the building public know that prices will not decline when peace is declared; that the immense amount of constructional work to be done when the war is over will cause a demand for materials sufficiently large to keep the price of building commodities either at their present level, or above, and the many other reasons, too numerous to mention, to show that prices will not fall.

An excellent opportunity to do this is presented in the coming Contractors and Builders' Show, to be held in Chicago, February 6 to 13, 1918, at the Coliseum. This is not an exhibition to stir the building activity in one particular locality; its scope is national, the materials and supplies exhibited making their appeal directly to architects, builders, and contractors from every part of the country.

Its attendance will be greatly augmented due to the fact that several national associations, closely allied to the building and contracting fields, will hold their conventions in Chicago on the same days upon which the exhibition will be held. In order to further increase the attendance and the number of materials displayed, the National Exhibiting Co., which has the show in hand, will start a huge advertising campaign, taking space in newspapers and trade papers, and will also do considerable direct advertising.

The value of such an exhibition to clay products manufacturers cannot be overestimated, especially at this time when it is necessary to take advantage of every opportunity that presents itself for promoting building. The lumber and cement industries are already lined up for considerable space —the clay products industry has just as much at stake, and should fall in with the campaign for the subjugation of building inertia by insuring a representative display of its products at this *national* exhibition.

* * *

Coal Shortage Doesn't Vex Fulton Company

In the November 6 issue of *Brick and Clay Record*, in the "Wake of the News" department, was published a statement that, because of the shortage of coal, the Fulton (Mo.) Fire Brick Co.'s plant was closed for an indefinite period on October 23. Since the publication of this item, which was abstracted from a newspaper clipping, we have learned that, rather than curtailing or suspending operations, the Fulton Fire Brick Co. is running to capacity and is sold up six months ahead The coal shortage, furthermore, is the source of nut little concern to the Fulton company, inasmuch as the company obtains its fuel from its own mines.

A new addition of 34,000 square feet of dry floor has just been made to the 19,500 square feet heretofore in use, and in addition to this, the company is completing six new kilns, two of which will go into service immediately and the remainder will be completed by January 1. When all six additions to the battery have been placed in operation, work will commence upon the construction of twelve more, which will give the Fulton Fire Brick Co. a total of thirty-two kilns.

It is readily apparent from this information that expansion rather than contraction is the policy of the Fulton Fire Brick Co. at this time.

* * *

Bureau of Standards Urges Use of Waste Pottery Bisque

From a circular letter sent by the Pittsburgh Laboratory to makers of glass pots and others, we give the following extract:

In work conducted at this laboratory it has been found that the waste bisque of whiteware potteries is well adapted for use as "grog" for pots used in the melting of optical glass so urgently needed at the present time for range-finders, gun sights, periscope lenses, etc. The low content of iron oxide in this material and its homogeneous structure render it superior to the crushed pot shell or calcined clay for this specific purpose. A much smaller and limited amount of porcelain bisque may also be used, but it is very important to keep the different kinds of body sharply separated, since porcelain table ware bisque is distinct from floor tile, electrical and sanitary porcelain. The porcelain can be used only in small quantities as a fluxing constituent, while the typical whiteware body is of a refractory nature.

It is evident that glazed pottery waste cannot be used and that we are speaking here of unglazed materials, which, thru some defect, cannot be fired in the glost burn. It is estimated that close to 250 tons of whiteware bisque are available per month at the present time and at a very reasonable price. Appeals to a number of large pottery manufacturers have been answered with most gratifying promptness which speaks well for their zeal for the common good.

The whiteware bisque is well suited also for use in the regular glass pot mixtures, but preference should be given to pots used in the melting of optical or signal glass. The whiteware bisque most suitable for this purpose should have a softening point corresponding to Orton cone No. 30, or above.

In being employed for this purpose the bisque is crushed in a jaw crusher or dry pan, screened, and then passed over a magnetic separator for the elimination of metallic iron.

The Pittsburgh laboratory is ready to give advice concerning the supply and use of this waste material to anyone interested and is ready to make softening point determinations free of charge. Inquiries should be addressed to the Bureau of Standards, 40th and Butler Streets, Pittsburgh, Pa.

* * *

Cleveland Companies to Get Coal Supply

Chances for getting a real coal supply immediately are now seen by brick and clay products concerns in the Cleveland and Northern Ohio district, following plans to eliminate delay in movement and unloading of coal cars and to prevent the use of cars for the storage of fuel, by State Fuel Administrator Johnson.

Thru this system the practice of allowing loaded cars to stand on sidings will be stopped, and in this way plants that need coal most will get it quickest, says Mr. Johnson. The plans include the establishment of a clearing house system, of which F. C. Baird will be the head. Mr. Baird now is looking after coal distribution in the Northwest. His duties will end with the closing of Great Lakes navigation. Need for some such drastic action is illustrated by the closing of steel furnaces in Youngstown and Cleveland because of lack of fuel. This pressing need, brought to the attention of the administrator's office, resulted in coal being received and operations continued at these plants. All the factories affected are making munitions for the government.

Plans for increasing the production of coal are being made at a conference between coal miners and mine operators at Hotel Hollenden, Cleveland. It is contended by the workmen that an increase of $1.40 a day in wages would result in many miners returning to their regular occupation, and leave the present industries to which they have been lured by high wages. This plan would increase the payroll of the miners in Ohio $200,000 a week.

* * *

Defining the New Explosives Law

Any person in the United States found with explosives in his possession after November 15, and who does not have a license issued by the Federal government showing the purpose for what the explosives are to be used, will be at once arrested and fined up to $5,000 or sent to prison for one year. If the circumstances warrant, the person may be fined $5,000 and in addition given the one year in prison.

This is the principal clause in a war measure passed by the last Congress which is now being put into effect by the Bureau of Mines, Department of the Interior, which bureau has been charged with its enforcement. Francis S. Peabody, of Chicago, a well known coal operator familiar with the use of explosives, large amounts of which are used in the coal mining industry, has been appointed by Secretary of the Interior Lane to act as assistant to the Director of the Bureau of Mines, Van H. Manning, in the enforcement of the law.

Under the law, the director of the bureau is empowered to utilize the services of all United States officers and all police officers of the states, including the city police forces, county sheriffs, deputies, constables, and all officers in any way charged with police duties. The police of the cities have already been organized for this work, headed by a committee of chiefs of police in the big cities, of which Major R. W. Pullman, superintendent of police of Washington, D. C., is chairman. The police are not only to look after the enforcement of the law, but are also to make thoro investigations of all dynamite outrages and fires in factories and warehouses, and to make their reports to the Director of the Bureau of Mines.

PROVISIONS OF THE LAW

The law provides that everyone who handles explosives must have a license. The manufacturer, the importer, and the exporter must have licenses issued by the Bureau of Mines in Washington. The seller of explosives and the purchaser of explosives must also have licenses, these to be issued generally by county clerks, or other local officers who are authorized to administer oaths. There will be at least one licensing officer in each county, and more agents will be designated if the county is sufficiently large to warrant it. If a state has laws providing for a system of licensing persons manufacturing, storing, selling or using explosives, the state officials authorized to issue such state licenses shall be designated as federal licensing agents; also, city officials qualified to issue city explosives licenses will be given authority to issue federal licenses. A federal license will not relieve any person from securing licenses required under state laws and local ordinances.

In each state there will be appointed a state explosives inspector, who will represent the Bureau of Mines in the administration of the law within the state.

Only citizens of the United States or of countries friendly to the United States and the Allies may so obtain licenses.

Clay products companies, contractors, mining companies, quarrymen and others using large quantities of explosives, which are handled by employes, may issue explosives to their employes only thru those employes holding a license, called a foreman's license.

The purchaser of dynamite, in obtaining a license, must state definitely what the explosive is to be used for and will be held responsible for its use as stated and the return of any explosives that may be left.

⁂

Streator Co. Publishes Plant Newspaper

A big step toward the realization of complete harmony between itself and its employes has been taken by the Streator (Ill.) Brick Co., in the publication of "The Brick Yard Gazette," a little newspaper given over entirely to chronicling items of interest to the men on the plant.

The purpose of this little newspaper is mainly to improve the pleasant relations which now exist among the workers and between the workmen and the company. "The object of this paper, the first issue of which you have before you," states the editor, E. F. Plumb, vice-president of the company, in the foreword, "is primarily to amuse and help to further the good feeling which now exists among the employes of the Streator Brick Co.

"The paper is published by the Streator Brick Co. and is furnished free to all employes. It is the intention of the company to issue an addition each month provided the men lend their heartiest co-operation. Nothing vulgar, or anything that will hurt a fellow worker's feelings will be printed.

"The policy is to make the paper ninety per cent. funny and ten per cent. serious. No joke is too old or too new to find a lodging here. A box will be provided in the locker room for contributions. Get your heads together and produce some good material for the next issue."

The first issue of the paper was filled with interesting and humorous material taken from within the confines of the plant entirely. Practically every man on the pay roll had his name in print, the majority of the characters being woven into a poetic outburst written by L. Claypool, the brick yard poet. The rest of the paper was given over to snappy witticisms about somebody whom everybody else knew, a sporting page and an automobile department, the latter of which gives some very valuable advise on how to put the car out of commission.

Like all live progressive publications, "The Brick Yard Gazette" carries an announcement of what is to appear in the next issue and among the feature articles lined up there is one on hypnotizing the company into giving more money. There will be a department conducted for the purpose of answering all questions of the heart, and in addition, two of the plant's celebrities will endeavor to give some valuable and worth while advice on questions of etiquette. Also, F. Plumb, president of the Streator Brick Co., will make his debut in a stirring article on "How to Live So As to Always Remain Young."

The Brick Yard Gazette

Volume 1 Number 1

Published by Streator Brick Company and it's Employees

Passed by the National Board of Censorship

It can readily be seen from the tenor of the foregoing resume of what the paper contains and what it is going to contain, that there will be few learned dissertations on the chemical reactions which take place in the combustion of coal or in the burning of clay ware. For the most part its contents will be designed to open up the pores of the workers and produce a feeling of good fellowship.

⁂

Think of John!

John Lampas was a young Greek, living in California. At the beginning of the war he gave the Red Cross his touring car, his gold watch, his bank deposit of $521, and all that he had left in his pockets—about $25.

This disposed of all his worldly possessions, and then he enlisted in the American Army with this sentence on his lips: "That's all I have, and I'm glad to give it."

The next time you are asked to give to the Red Cross, Liberty Loan, or any equally patriotic cause, remember John, the Greek, before you make your decision.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

This, the Eleventh Article, Completes the Study of Rate Application and Tariff Interpretation from the Quantitive Standpoint; In Next Issue It Will Be Considered from the Territorial Standpoint.

By Sydney A. Hale

SYNOPSIS: Preceding articles in this series covered the importance of freight rate knowledge to the business man, the legal standards which rates must meet and the machinery for their control. The commodity application of road-haul rates, beginning with the classification as the basis of all rate-making and preceding down thru class rates and exceptions to the classification to commodity rates, was then considered. This article concludes the study of rate application and tariff interpretation from the quantitative standpoint. The next issue will take up the study from the standpoint of territorial application.

THE NECESSARY EXPENSE and trouble attending the carriage of less-than-carload shipments, large or small, which, aside from the manual labor involved, are practically the same irrespective of weight and bulk of package, justifies the fixing of a minimum weight and charge for the transportation of such shipments.—Wrigley v. C. C. C. & St. L. Ry. Co., 10 I. C. C., 412.

DIVISION OF RATES ARE THREEFOLD

The quantitative analysis of rates presents a natural threefold division. The first covers carload rates with the carload minimum as the quantitative factor. With less-than-carload charges the weight unit is of less importance. Carload minima are designed to conserve railroad revenues and service by checking the abuse of equipment thru light loading. Less-than-carload minima, except in special cases, aim to conserve railroad revenues without relation to either minimum or maximum car space utilization.

This does not mean that weight is absolutely ignored in fixing minimum charges upon less-than-carload freight, but it is subordinate to a revenue minimum. While the major classifications fix 100 pounds as the minimum weight basis for the computation of charges upon any single shipment, they also provide that no shipment will be handled for less than 25 cents. In Official Classification, the conservation of revenue is further supported by a rule that the minimum charge shall not be less than 100 pounds at first class rates. To illustrate: Shoe eyelets have a third class less-than-carload rating. The third class rate from Boston to Chicago is 52.5 cents. A shipment weighing 100 pounds or less would be subject to the minimum charge on 100 pounds at first class, or 78.8 cents. If the shipment weighed 200 pounds, the proper charge would be $1.05 because the charge at actual weight and rate exceeds that accruing under the classification minimum. Southern and Western Classifications are more liberal, the rule being that on articles rated first class or lower, the charge shall be at the class to which the article belongs. A shipment of nested frying pans weighing 100 pounds and moving from Granite City, Ill., to Houston would pay the third class rate of $1.04 instead of the first class charge of $1.47.

RULES ON MIXED LESS-THAN-CARLOAD SHIPMENTS

With respect to mixed less-than-carload shipments, the general provisions of the three classifications are uniform. Where articles of more than one class are included in a single package, the shipment is charged at the rate applying upon the highest rated article in that package. Where the quantity of any one class, therefore, exceeds the minimum, considerable saving may be effected by having each class packed separately. To show how this works out in actual practice, take the case of a shipment moving from a Chicago jobber to a general store at Big Springs, Tex. The class rates controlling are as follows:

Class	1	2	3	4	5	A	B	C	D	E
Rate	167	141	116	106	82	88	78	65	52	44

Mr. Merchant at Big Springs orders two rolls of linoleum weighing 300 pounds and rated at second class; an assortment of rugs weighing 100 pounds, rated first class, and a like quantity of feather comforters, rated double first class. Under the rule above stated, if the three lots are put into one packing case, he will pay $16.70, the double first class rate applicable to the comforters. If each commodity is separately packed, the charge will be $9.24. If the jobber is wise, the rugs and comforters will be packed in fibre instead of wooden cases and the linoleum will be shipped in burlapped rolls. In this way, the dead weight of the packages which pay the same rate as their contents, is lessened.

SPECIAL CHARGES ON LONG AND BULKY ARTICLES

The classification provisions as to minimum charges above quoted have reference to merchandise generally; when the freight is unusual in length or exceptionally bulky in relation to its weight, it is recognized that these characteristics justify the application of a different rule. Subject to such exceptions as the carriers make in individual items and tariffs, a shipment containing articles that cannot be loaded thru a center side doorway 6 feet wide and 7½ feet high into a car 36 feet long, 3½ feet wide and 8 feet high, without the use of an end door or window, pays a minimum charge on 4,000 pounds at the first class rate on the entire shipment. Where the shipment contains an article over 22 feet in length, but not over 12 inches in diameter, and is loaded by the use of end door or window, the minimum is 1,000 pounds at the first class rate on the entire shipment.[†]

If an article is of such length that it requires more than one car, the shipment is subject to a minimum charge on 5,000 pounds at first class rate for each car used in Western Classification territory and at 4,000 pounds in Southern. Official Classification treats such shipments as carload traffic, charging the regular minimum (but not less than 24,000 pounds[‡]) for the first car and 50 per cent. of such weight for each additional car. In Western and Southern Classification territories, carload shipments of this description are charged at the actual rate and established minimum for each car used. Special provisions as to the minima applicable upon shipments made in open cars are also incorporated in the classifications.

PUBLIC POLICY UPHOLDS ANY-QUANTITY RATES

While the Interstate Commerce Commission is the final arbiter, the initiation of rates and rules lies with the carriers. It is for them to determine in the first instance whether they will publish carload and less-than-carload rates or confine themselves to one rate applying upon both classes of traffic. If the latter course be followed, the presumption is that the any-quantity rate established is higher than a true carload and lower than a true less-than-carload rate upon the same commodity would be. While the difference in service is advanced in support of a difference between carload and less-than-carload rates, that difference has not been considered so controlling as to warrant the establishment of carload rates when there is a reasonable any-quantity basis in effect.

In the opinion of the Commission, any-quantity rates rest upon sound public policy. They enable the smaller shipper to compete on equal terms with his larger rival. Therefore, as long as the any-quantity basis is reasonable in and of itself, carriers will not ordinarily be required to apply different rates to carload and less-than-carload movements, especially if such application would tend to increase the less-than-carload rates. "It is highly significant," remarked the Commission in one case, "that no order has ever been issued requiring that an any-quantity basis be superseded."

Because of the peculiar hybrid nature of any-quantity rates, they can be subject to no restrictions as to carload minima. Indeed, where the any-quantity basis is in effect, the shipper has no right to demand a car of a given size, notwithstanding the fact that the traffic may be destined to a point on a connecting line to which such connection publishes a carload rate and minimum. Such rates are, however, subject to the minimum charge restrictions applicable to less-than-carload rates. Articles moving upon an any-quantity basis may not be included in carload mixtures without specific tariff authority.

* * *

A "Remembrance Fund" for the Boys in Khaki

As the business of making war proceeds, its real significance is gradually brought out in stronger and stronger relief against the complacent background of our past peaceful existence. Its meaning is made strikingly clear as, one by one, our comrades, our relatives, our former employes take up the cause of Democracy and shoulder a gun for Uncle Sam. Willingly they are giving up the pleasures which we back home may continue to enjoy; eagerly they are steeling themselves to the gruelling training for grim military combat.

Our obligation to them, however, by no means ends with a fond farewell and a loving wave of the hand. Rather, our debt to them increases when they don the khaki to fight humanity's fight, and the least we can do to assure them that their comfort and welfare are always in our minds and our hearts is to keep them supplied with a few of the little luxuries which they enjoyed at home. One particularly effective method of doing this has been adopted by the Hill Clutch Co., of Cleveland, Ohio, and is described in a very stirring appeal to its workers which has been posted in conspicuous points about the company's plant. The appeal reads as follows:

DOING OUR BIT

The call to arms has sounded thruout the length and breadth of our land. It is probable that one or more of our young men, the flower of the nation, from nearly every office and shop in our city, has already responded to the call of our government, and are now preparing themselves for one of the noblest self-sacrificing acts in the history of our country.

They are gone but not forgotten. Their deeds of valor mean much to us, we all know. Let us not just think of them, but do for them. Make your good wishes mean more than words.

Five of the boys from our office and shop have already given their services and are now in training camp, and for them we have originated a "Remembrance Fund." These boxes are placed in convenient places thruout the office and shop, and every week will be emptied by an appointed one to purchase tobacco, candy, chocolate, etc., which will be forwarded to them. Magazines, newspapers, and many other articles are also solicited; in fact anything that might suggest itself as being appropriate for army life. In a large organization this plan can be systematized by each department taking care of its own members.

A "Cheer Box" every week for our enlisted brothers. Think what it means to them. Would that every organization in Cleveland or thruout the country might do likewise. It is part of "doing our bit" and we hope you will join with us.

Hill Clutch Co. Employes.

* * *

Hollow Tile Association Has Code Engineer

John A. Ferguson, an independent consulting engineer, and an eminent authority upon building code requirements, has been engaged by the Hollow Building Tile Association, Conway Building, Chicago, of which E. R. Sturtevant is secretary, and will assist municipal authorities and others in the preparation of building codes. He will advise with regard to the proper uses of this excellent building material and will endeavor to see that it is done justice.

This step on the part of the association is considered to be a very wise one. Mr. Ferguson fills a long-felt want and will have considerable opportunity to do good work in connection with new municipal codes which are constantly developing and with many old ones which are and will be revised.

* * *

Few people know that the largest ceramic library in the country is located at the Ohio State University. The library is located on the second floor of Lord Hall and is unrivaled by any institution in the country, not excepting the Congressional Library at Washington. The collection numbers approximately 5,000 volumes, on ceramic and allied subjects.

[†] It is understood, of course, that, if the total transportation charge at actual weight and rate is more than under the minimum weight and first class rate, such higher charge applies.

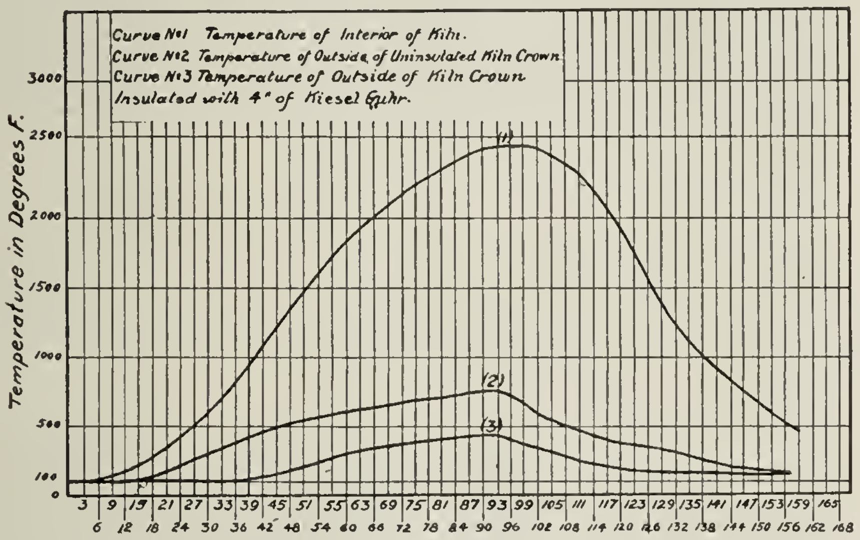
[‡] In no case, however, will the aggregate charge for a series of cars exceed the aggregate charge for the same number of single cars. A series is determined by the number of cars over which the continuous lading extends, but not more than four cars can be considered as one series.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

INSULATING KILN CROWNS

SOME TIME AGO A. V. Bleininger, now chief ceramic chemist of the Bureau of Standards, conducted several tests to determine the distribution of the heat in kilns. He worked on four different types of industrial kilns, two of which were terra cotta kilns and the others a paving brick and a sewer pipe kiln. All four kilns were of different construction. In these experiments Mr. Bleininger found that from one-third to three-fourths of the heat given up by the fuel in the fireboxes was lost by radiation thru the walls and crown of the kiln. The results of those experiments show plainly the need for some means of minimizing this waste.



The Difference in the Amount of Heat Lost Thru the Kiln Crown When Insulated and Uninsulated Is Clearly Shown by Curves No. 2 and 3. These Tests Were Made on a Pottery Kiln.

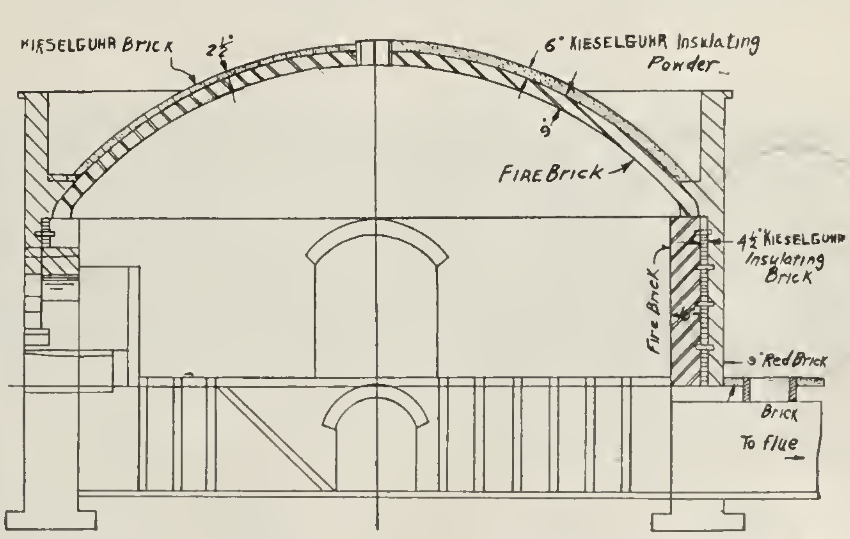
It seems strange that we show such great stupidity in the construction of our kilns and fail to utilize means at hand that would prevent this great waste of energy. Many of us have realized that there is a great deal of heat lost thru radiation and have built thirty-six inch walls to arrest it; and then crown our first class efforts with only a nine-inch shell. For some reason or other we get a good start and then stop half way. Whether it is because we are short-sighted, indifferent, or simply ignorant, it is hard to say. Probably there are examples of all three of those classes among us. Nevertheless, the fact remains that a good portion of the heat that Mr. Bleininger proved was lost can be saved to do useful work. If it can be saved to do useful work it means that much less fuel will have to be used in the burning of our ware, an important consideration these days.

The way we can save this heat is to insulate our kilns. This can be done by building thick walls and covering our crowns with cement, ashes, platting, or some sort of roof. Undoubtedly the best material would be kieselguhr.

Kieselguhr is a siliceous material which was formed by the accumulation of a multitude of shells of small sea animals called diatoms. These diatoms varied in size from a pin head to a small particle barely visible thru a microscope. Accumulations of kieselguhr occur in nearly every state. Some of these deposits are contaminated with sand and clay while others are found in a fair degree of purity. The color of the material is white when pure and brownish when contaminated with impurities. It is very fluffy and light in weight. Due to the infinite number of minute enclosed cells that it contains kieselguhr makes an effective heat insulator. As in the principle of the hollow tile wall, each air cell in kieselguhr resists the passage of heat. The resistance to the flow of heat thru kieselguhr is well shown by taking a brick made of it and applying a blow torch to it while holding it in your hand. No discomfort due to heat is felt. However, should you do the same with any ordinary brick, the heat conducted thru the brick would soon become so intense that it would be impossible to continue the hold upon it.

The use of kieselguhr in the form of powder or brick in kilns would undoubtedly result in an immense reduction of radiation losses. Greaves-Walker, in his articles on the "Design and Construction of Down Draft Kilns," has recommended the use of this material for insulating the kiln crown. Some plants have experimented with it and are well satisfied with the results obtained. One of these firms is the Streator (Ill.) Brick Co., which plastered a thickness of about two and one-half inches of kieselguhr over a kiln crown and then placed a platting of brick on top of it to protect it from the weather. Altho a problem has presented itself in the cracking and bulging of the platting, the kieselguhr itself has given no trouble whatever.

This kiln constantly burns brick with 200 pounds of coal less per thousand brick than any other kiln operated by the Streator company. Undoubtedly, part of this is due to the better construction of the kiln, but the Streator Brick Co. states that they concede that the kieselguhr insulation is responsible for a good part of the saving. As an example of the heat resisting qualities of this crown, it is possible to hold a hand on the top of this kiln when the temperature inside is 1,800 degrees Fahr., even in the hottest weather, without extreme discomfort.



Cross-Section of Kiln, Showing Proper Insulation of Crown and Walls with Keiselguhr Insulating Brick and Powder.

You Should Know of the Many Advantages of

THE POTTS SPECIAL

A Soft Mud Brick Machine

Self Striking—Horizontal—for Common and Fire Brick

Ask Us for Details and Names of Users

C. & A. POTTS & CO., Indianapolis, Ind.

MORE WORKING CAPITAL

or do you want to expand, to improve a good plant? We specialize in clay plant properties, arrange for the issuance and sale of Bonds. We have rendered aid to many plants. Write us about your needs.

F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILLINOIS

UNION STEEL RIVETLESS CHAIN BELTING

Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket

Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used. Sprockets, Buckets, Elevators, etc.—Send for Catalog

"The Chain of Double Life"

THE UNION CHAIN & MFG. CO., SEVILLE, OHIO

CLARAGE

KALAMAZOO Multiblade Fans

Have a Multitude of Good Points

Write for our Complete Catalog

CLARAGE FAN COMPANY

Kalamazoo, Michigan, U. S. A.

GOODRICH Belts

"Commander" Transmission and "Longlife" Conveyor Belts are unbeatable for the Brick and Clay industry.

THE B.F. GOODRICH COMPANY

Factories: AKRON, OHIO Representation Everywhere

SAUERMAN'S

Dragline Cableway Excavator

It digs, conveys, dumps in one operation

TRACK CABLE
LOAD CABLE
DUMP TROLLEY
BUCKET DIGGING
BUCKET DUMPING
ANCHOR
SPOIL PILE
DOUBLE DRUM ENGINE A BOILER MOUNTED ON MOVABLE TOWER

SAUERMAN BROS.

316 S. Dearborn St., - Chicago, Ill.

THE SLIP-STOPPING PULLEY

CORK INSERT PULLEYS

BRAKE LININGS, CLUTCH FACINGS AND TENSIONS overcome the worst conditions and produce operating economy. SEND FOR CATALOG

THE CORK INSERT CO., 168A Federal Street, Boston, Mass.

TO STOP advertising to save money is like stopping a clock to save time.

—*The Little News.*

Coke as a Substitute for Coal

A possible candidate as a substitute for coal is coke. The great disadvantage of this material is its short flame. As we all know the gas which is formed when coal is burned must travel a considerable distance before it comes into contact with the ware to be burned. The heat that exists in the center of a kiln is produced partly by the temperature of the gases generated by the burning of the carbon and partly by the burning of the volatile matter right in the kiln. The heat formed by the burning of the volatile gases is relatively higher that that formed by the combustion of carbon. With coke, however, which contains no volatile matter, the combustion is more localized and difficulty is met with in driving the heat into the kiln.

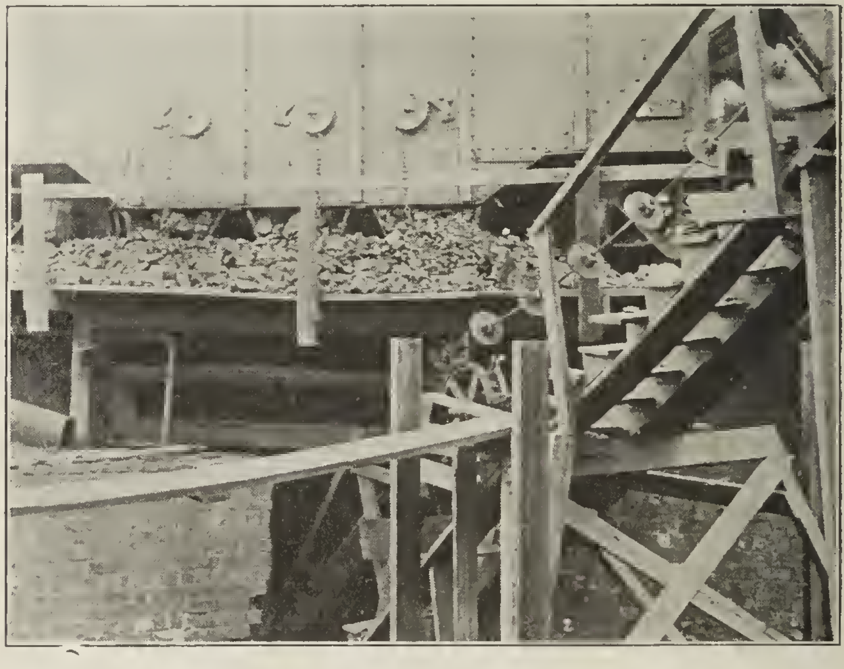
A mixture of coal and coke has been suggested for use in kilns and under boilers. No special grate is required and the fuels may be either mixed before being used or placed on the fire in alternate shovelfuls, according to convenience. Too much coke cannot be used since it would unduly decrease the length of flame. With a mixture of thirty per cent. of coke and the remainder a long flamed coal of good quality, satisfactory results may be obtained.

⁂

The Passing of the Flat Bottom Coal Car

A new and serious problem confronts the clay products industry today not only in the shortage of fuel but in the method of transporting fuel. For years it has been the custom for the clay products industry to receive its large quota of the nation's fuel in flat bottom gondolas, from which the coal could very easily be recovered by the use of brawny arms and big scoops.

However, war time transportation exigencies have caused the passing of the flat bottom coal cars for use in other fields, and in its stead has been substituted the hopper bottom. It has been found exceedingly difficult to remove the contents of this new type of car by the use of muscle and shovel, due to the absence of a flat surface. Not only is the task a more difficult one for the workmen but the cost of unloading the coal has been greatly increased, due to the increased amount of time consumed in this operation.



Bin into Which the Hopper Bottom Cars Dump Their Coal Cargo at the Plant of the Vigo-American Clay Co., at Terra Haute, Ind., and from Which the Conveyor Removes One Hundred and Fifty Tons a Day.

Several solutions to this problem are being worked out. Some plants are erecting tipples running over bins into which the fuel is dropped from the car; others are digging excavations beneath the railroad tracks in which to build a coal receiving device, from which the coal is conveyed into the plant by means of some type of elevator. Such a system, in use on the American plant of the Vigo-American Clay Co., at Terre Haute, Ind., was described in the December 5, 1916, issue of *Brick and Clay Record.*

The system which the Metropolitan Paving Brick Co. is now installing at its Canton plant is pictured in the accompanying illustration. Under a long tipple supported by heavy brick piers, is built a large bin. This bin is suspended high enough in the air to permit small steel coal cars to be run underneath it.

Newly Constructed Tipple, Built at the Canton (Ohio) Plant of the Metropolitan Paving Brick Co., as a Part of Its New Coal Distributing System.

This is only one feature, however, of a complete coal distributing system which the company is installing and which will replace the loose methods heretofore employed with an expeditious and economical distributing system. The plan involves a continuation of the transfer track running beneath two rows of rectangular kilns to below the coal bin. From this transfer track will be laid short tracks between all of the company's kilns. These tracks will be built at the same height from the transfer track as are the dryer tracks and will consequently make possible the use of the dryer transfer in bringing the coal from the large hopper to different points on the yard. The transfer will have a capacity of two coal dumping cars and will be conveyed over the tracks by means of a gasoline locomotive.

The possibilities of saving in the handling of coal on clay products plants are many. Unlimited energy and money is wasted in laboriously removing the contents of the coal car by hand. Mechanical methods are essential and it may be entirely possible that instead of being but another problem for the industry to overcome the passing of flat bottom coal cars will be the means of inaugurating new money-saving, mechanical methods.

In the June 1, 1915, issue of *Brick and Clay Record,* on page 1042, is an article by L. B. Rainey, Cr. E., containing the working drawings and complete description of a home made coal unloader and bins, which has been used with success on one of the large sewer pipe plants in Ohio.

CRESCENT
BELT FASTENERS
are known by the company they keep. They are bought and used or recommended by a surprisingly large number of belting manufacturers. We could say more, but is it necessary? We're waiting to hear from YOU!
CRESCENT BELT FASTENER CO.
381 Fourth Ave., NEW YORK, N. Y.

MANGANESE
CRIMORA
Use it for your greys, blacks and speckles. You can always depend upon it to give exact repeat colors. Order it in any grade or size desired.
Crimora Manganese Corporation
30 East 42nd Street New York

Blasting without using the
CYCLONE DRILL
is like hunting deer with birdshot. You can't possibly get good results.
We are ready to offer you facts and figures to prove that the Cyclone Drill will soon pay for itself.
Ask for names of users and Bulletin No. 4
The Sanderson-Cyclone Drill Co.
ORRVILLE, OHIO

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.
Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.
Approved by Nat'l Board of Fire Underwriters.
HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

SIL-O-CEL
PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway
CHICAGO Monadnock Bldg
PITTSBURGH Oliver Bldg
LOS ANGELES Van Nuys Bldg
SAN FRANCISCO Monadnock Bldg

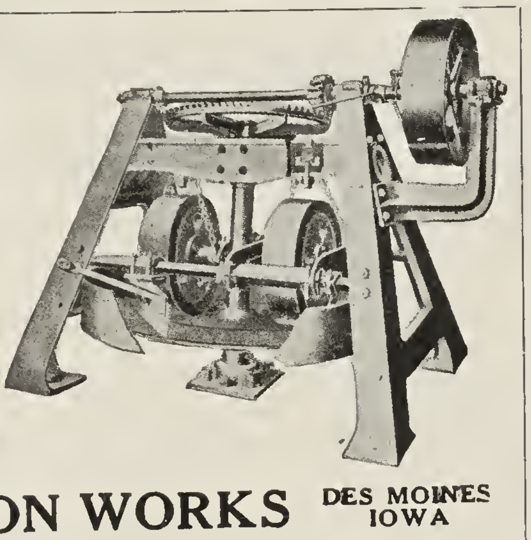
Write nearest Office for Samples and Information

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

THE EAGLE DRY PAN



Write for Prices

EAGLE IRON WORKS DES MOINES IOWA

Base Metal Couples and Low Resistance Instruments are absolutely unfitted for use on Clay plants.

We do not and we will not sell that class of equipment for measuring temperatures exceeding red heat.

STUPAKOFF PYROMETERS

for high ranges of temperature are equipped only with rare metal couples and high resistance galvanometers. They are dependable and we guarantee satisfaction.

The Stupakoff Laboratories
Pittsburgh, Pa.

QUESTIONS

A Three Cent Stamp May Bring
You Advice That Will Stop
a Waste, Improve Your Ware
or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

Is Stiff Mud or Dry Press Fire Brick Best?

840. *Indiana—We would like to ask you for some information regarding the manufacture of fire brick. We are going to change the output of our plant to fire brick and would like to know what is the best method of making that product. We have a stiff mud machine which we might use, but in as much as we have heard that stiff mud fire brick are very inferior to dry press we would like to secure definite information before proceeding with our plans. Will you kindly give us some idea of the relative merits of dry press and stiff mud fire brick and also the general opinion of brick manufacturers on this subject?*

Fire brick manufacturers differ widely in their opinion as to which process of manufacture, the dry press, soft mud, or stiff mud, gives the most satisfactory fire brick. However, many authorities agree that for some purposes the stiff mud fire brick is preferred, while for a different use the soft mud brick or the dry press may be used to better advantage.

Dry pressed fire brick are offered with success for annealing furnaces, cupolas, outside and inside liners of by-product coke ovens, for bakery ovens, stack linings and for kiln construction. They are preferred for these, and some other purposes, because of their perfect mechanical shape and uniformity of size, which permits their being laid with close joints, and so giving a more uniform wall surface.

In addition to this, the granular structure gives a more uniform expansion and contraction thruout the individual brick and consequently prolongs its life.

Stiff mud fire brick are getting preference in fields where a great crushing strength and resistance to abrasion is desired, as for instance, the side walls of blast furnaces.

Soft mud fire brick are very similar in their properties to stiff mud brick, but generally they are of greater heat resistance and subject to less spalling but more abrasion than the brick made by the stiff mud process. Also, fire brick made by the soft mud process is not able to carry as heavy a load as those made by the stiff mud process.

In the manufacture of fire brick, the brick should be burned to as high a temperature as possible. In general a longer period of burning is required for dry press brick than for stiff mud, and for stiff mud than for soft mud brick to obtain good strength.

⁂

How to Prepare a Silica Brick Batch

841. *Georgia—In answering a question relative to the manufacture of silica brick in your October 23 issue, the statement was made that "silica brick are made by taking 2 per cent. (by weight) of lime, slacking it, and then adding it to 98 per cent. of ground silica. The silica should be crystallized*

and ANSWERS

Best Authorities in Every Clay-working Branch are Called into Consultation — Their Advice is Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

---

and of such a character that it will grind down to splinters and particles of irregular sizes which overlap and interlock to a great extent."

Now by 2 per cent. of lime by weight, is it meant that the lime is weighed before being slacked, or should each batch contain 2 per cent. slacked lime in the form of putty? Should the lime putty be added to the ganister rock in the pan, and the water added to this, or is it best to mix the lime with the water before putting it into the pan? Should the material be ground very fine in the wet pan? About what heat Fahr. is required to properly burn silica brick?

Lime used in the manufacture of silica brick should be of a high degree of purity and fresh.

Generally the lime stone is burned to a temperature of 800 deg. Cent. (1432 deg. Fahr.) to drive off the carbon dioxide. If this burning temperature is brought to a much higher point the lime will slack too slowly and will give a poor batch when mixed with the silica. Two per cent. of the lime before it is slacked is weighed out and then about sixty per cent. of water by weight is added to slack it.

The raw batch of quartzite rock is added to the pan and the slacked lime then introduced. The batch is ground until the largest particles of silica are about the size of a pea. Then it is shoveled into a wheelbarrow and brought to the molding benches where it is immediately molded into brick by the "slop mold" process.

The silica brick should be burned to a temperature of 2,700-2,900 deg. Fahr. It usually takes eight to twelve days to reach this temperature. The cooling must be done very slowly or the brick will crack and spall.

We would suggest that you read the following articles which have appeared in recent issues of *Brick and Clay Record*:

"Suggested Improvements in the Manufacture of Silica Brick," page 127, July 17, 1917, issue.

"Refractory Brick, Their Properties and Constitutents," page 211, July 31, 1917, issue.

You will find in the above two articles exhaustive answers to many of the questions which arise concerning the manufacture of silica brick.

⁂

The Relative Merits of Brick and Concrete Pavements, from Government Bulletins

842. *South Dakota—Our city commissioners and Commercial Club are starting a campaign for the purpose of paving several blocks of our city early next year. Upon several occasions I have been asked about the relative merits of brick and concrete pavements, and the suitability of these two types of pavements for urban use. The president of the Commercial Club is an ardent booster of the concrete pave-*

Send for a Can Today

Get This Can on TRIAL

Keep your belts from slipping. Don't let them rot.

"SERO" Belt Dressing

makes them efficient.

"Sero" on your belts reduces the power consumption and prolongs the life of the belt.

Sero Specialty Co., Cleveland, O.

We also make "Sero" Gear and Cable Coating and Manila Rope Dressing.

It carries the Shale and Clay

Over—Hills - Railroad Tracks - Rivers

Broderick & Bascom's Aerial Rope Tramway

Transports Clay that would be inaccessible by any other system. Get our complete descriptive catalog.

Broderick & Bascom Rope Co.

New York St. Louis, Mo. Seattle

IN THE HEART OF THINGS

The House of Taylor

400 Baths
600 Rooms

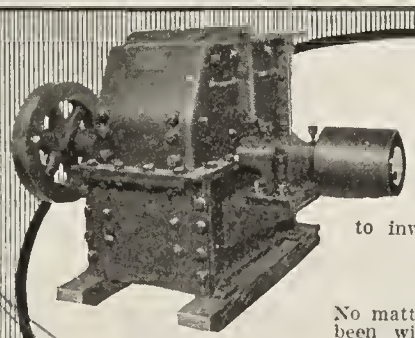
Hotel Martinique
Broadway, 32nd St., New York
One Block from Pennsylvania Station
Equally Convenient for Amusements, Shopping or Business

157 Pleasant Rooms with Private Bath
$2.50 Per Day

257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure
$3.00 Per Day

Also Attractive Rooms from $1.50

The Restaurant Prices Are Most Moderate



It will pay *You*

to investigate the superior merits of the

K-B Pulverizer

No matter what your experience may have been with other crushing machines, the K-B All-Steel Hammer Mill will probably show you something you haven't known about pulverizing at low cost.
Built for Service and Durability.

Send for catalog now

K-B Pulverizer Company, Inc.
2009 Market St., Philadelphia

Makes Assurance Doubly Sure

The Homestead Quarter Turn Valve installed with the Hovalco Valve, as shown, is a combination that will act as an additional safeguard on your blowoff lines. If any leakage should develop in the angle valve, the Homestead can be closed while the other one is being repaired. Ask us all about this "money saving pair." Catalog L sent on request.

Homestead Valve Mfg. Co.
Homestead, Pa.

FANS For every Dryer requirement. We will estimate for you and deliver promptly. Below is shown one of our installations on the plant of the Paterson Clay Products Co., Clearfield, Pa.

For estimates, plans or information address our Pittsburgh office, 8044 Jenkins Arcade Bldg., or the home office.

Blairsville Machine Company
Blairsville, Pa.

Specialists on Fans for Dryers

"SCANDINAVIA"
(Solid Woven Cotton Belt)

is the kind of belt that gets the preference from those clay-products manufacturers who are most particular about knowing the exact cost of operation in every detail.

"Scandinavia" always shows-up so well when the manager looks over the cost figures that there never is any question as to the belt that will always have the preference.

"Scandinavia" is the belt for you to use for power transmission—elevating and conveying.

Try it once and you'll be convinced

Scandinavia Belting Co.
106-108 Reade Street, New York

Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.

Canada: Federal Engineering Co., Limited, Toronto and Montreal.

ment, basing his decision upon the performances of that type in other South Dakota cities which he has visited. Alone, I am not able to make out a strong enough case for the sister-material to that which I manufacture and ask you to outline a few brief points that will help me advance the cause of the vitrified brick pavement.

It is our opinion that the most effective work you could do in pushing the case of vitrified brick pavements is to give publicity to the findings of the federal government in its investigation of concrete and brick pavements. These findings have been published in Department Bulletins 246 and 249, issued by the United States Office of Public Roads. To illustrate one method of how this material might be used, we are publishing herewith an article which the Standard Brick Co., of Crawfordsville, Ind., had inserted in a Crawfordsville paper. This material has been sent to us by James R. Thomas, manager of that company, in the hope that it would prove of value to manufacturers of vitrified paving brick in other localities. The article published in the Crawfordsville paper follows:

OF WHAT SHALL WE BUILD OUR ROADS?

As taxpayers, we should be interested in seeing our roads built of the most durable material, insuring maximum life and minimum repairs. It is a crime to build a road which will be worn out before it is paid for.

It is not necessary for us to experiment with the various kinds of road materials at the expense of the taxpayers to determine, after a term of years, and after thousands of dollars have been spent, what is the most durable road material.

Let us profit by the mistakes of other counties in this and other states. They are fast coming to recognize the most durable and most economical material to use for the surface of a road or street. All we have to do is to read what the United States government has to say about road materials. The United States office of Public Roads has issued a bulletin entitled:

PORTLAND CEMENT CONCRETE PAVEMENTS FOR COUNTRY ROADS

Department Bulletin No. 249.

The following extracts are of special significance:

"Enthusiastic advocates of concrete roads should bear in mind that such roads can never be economically adapted to all traffic conditions, and those who are in responsible charge of road-improvement work should realize the importance of making a careful economic comparison of the various kinds of road surfaces under the conditions to be met before deciding upon the type of improvement to adopt.

"The principal advantages which concrete pavements possess may be briefly stated and commented upon as follows:

"1. As far as can be judged, they are durable under ordinary suburban and rural traffic conditions. While it is true that there are no very old concrete pavements in existence, the present condition of many of those which have undergone several years' service would seem to warrant the above statement.

"2. They present a smooth, even surface, which offers very little resistance to traffic. In the past the surfaces of concrete pavements have sometimes been roughened in order to insure a good foothold for horses. This practice has now been abandoned, except on very steep grades, because it tends greatly to accelerate deterioration of the pavement, and because the smooth surface has been found to afford a fairly satisfactory foothold under all ordinary conditions.

"3. They produce practically no dust and may be easily cleaned.

"4. They can be maintained at comparatively small cost until renewals become necessary.

"5. They may be made to serve as an excellent base for some other type of surface when resurfacing becomes desirable.

"6. They present a pleasing appearance."

DISADVANTAGES OF CEMENT ROADS

The bulletin briefly outlines the disadvantages of Portland cement concrete road surface as follows:

"1. They are somewhat noisy under horse traffic.

"2. There is no method of constructing necessary joints in the pavements which will entirely prevent excessive wear in their vicinity. Furthermore, joints do not altogether eliminate cracking, and wherever a crack develops it must be given frequent attention in order to prevent rapid deterioration of the pavement.

"3. They cannot be as readily and effectively repaired as many other types of pavements, and must remain closed for at least a week after making repairs."

Under the subject, "Maintenance," the bulletin reads: "The maintenance of the pavement consists, for the most part, in repairing cup holes, cracks, contraction joints, and perhaps the renewal of an occasional defective area.

"Cup holes are spots in the surface of the pavement which break down under traffic and which may result from any one of a number of causes.* * * When cup holds first appear, they are usually from one to two inches in diameter and from one-half to one inch in depth, but they become gradually enlarged by the action of traffic in loosening and abrading the concrete around the edges, and unless promptly repaired they may soon have an area of several square feet and a considerable depth. The action of traffic also gradually breaks away the concrete at the edges of cracks and joints, and if proper maintenance is not provided a considerable area of the surface of the pavement will be destroyed. The maintenance of cup holes, cracks and joints usually consists of filling them with tar and covering the tar with coarse sand, pea gravel, or stone chips. Satisfactory results can be secured by this method only when a crew with proper equipment and materials goes over the road making necessary repairs at least two or three times a year.

"Where defects of any considerable size are to be repaired the edges should be chiseled down until they are approximately vertical and not less than about one inch deep. The hole should be thoroly cleaned and painted with tar, after which it should be filled with clean, coarse chips thoroly grouted with tar. The surface of the patch should then be covered with coarse sand, pea gravel, or fine stone chips."

Imagine the appearance of a road patched "at least two or three times every year" by filling "contraction joints," irregular "cracks," "cup holes" and "defects of considerable size" in a rigid white Portland cement concrete road surface with a plastic black tary substance! Such a condition would look more like a relief map in color, than a neat road surface. It is self-evident that the reasons for repairing with tar, sand, gravel and stone are:

SELF LOADING
ELECTRIC INDUSTRIAL TRUCKS

High Up in the Air
4½ Inches—is where the
Elwell Parker "Self-Loading" Electric Truck

carries the load above all runway obstructions.

A special truck built for the Clay Working Industry to handle all the presses produce.

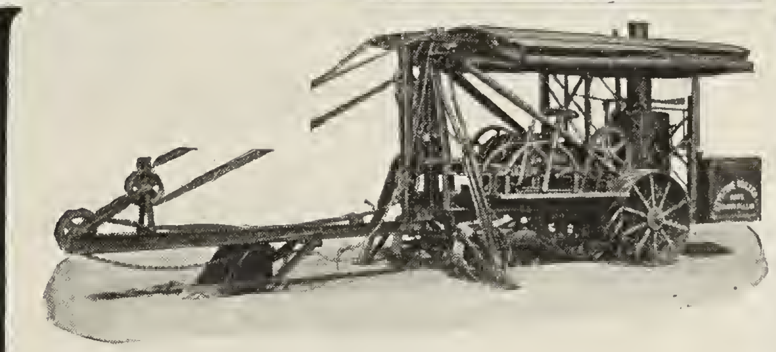
All parts enclosed to fit your plant conditions and enable you to increase your production at less cost.

Four barrow loads delivered at three times the speed on each trip.

Ask for Catalogue No. 711

The Elwell-Parker Electric Co.
"Pioneer Builder of Electric Industrial Trucks"
Cleveland, Ohio

KEYSTONE



**Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?**

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards a day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

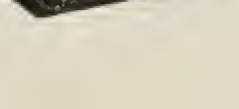
For excavating below grade tho DRAG DITCHING SCOOP is put on.

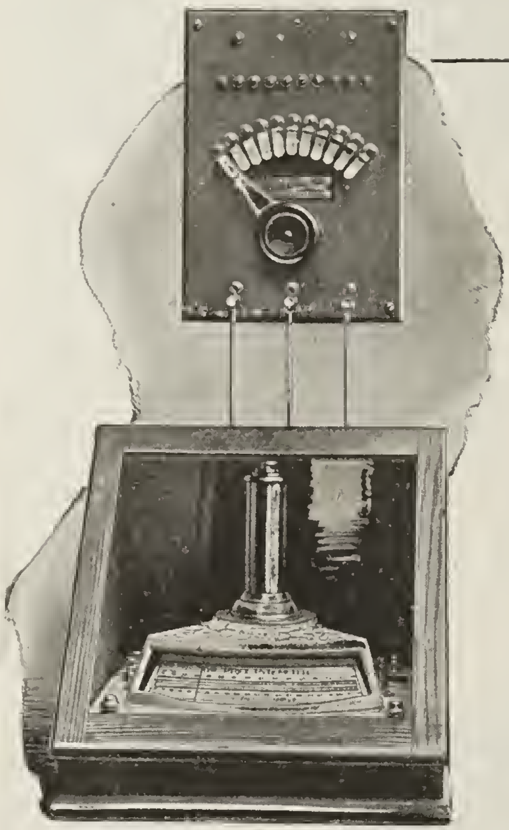
Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Joplin, Missouri
Monadnock Block, Chicago

STEAM SHOVELS





These Things
It Is Impossible
To Do Unaided

You can't guess correctly the heat in your kilns—always.

You can never tell surely, whether you are progressing, standing still or falling back with the heat.

You **can** do this with

PRICE PYROMETERS

Let us show you where it has been done-is being done

The Price Electric Company
12367 Euclid Avenue Cleveland, Ohio

You won't have to worry about competition if you treat your clay with

R. H. Precipitated Carbonate of Barytes

You can safely guarantee that your brick will be

Scum-Proof

You can get a higher price and influence architects to specify your product because Efflorescence is prevented absolutely.

But insist on the R. H. BRAND—it's dependable.

We have a complete line of high grade chemicals for the clay industry.

The Roessler & Hasslacher Chemical Company
100 William Street New York
Chicago, Ill. Cleveland O. St Louis, Mo.
Kansas City, Mo. San Francisco, Cal. Philadelphia, Pa.
Boston, Mass. New Orleans, La
Cincinnati, O.

1. A repair with Portland cement concrete is pretty sure to crack all around and thru the repairs, because of rigidity and lack of resiliency of Portland cement concrete and the inability to make a union between the old and the new.

2. Surfaces repaired with Portland cement concrete, like the original must be kept closed from traffic for at least ten days, while the cement is "setting." If not so barricaded from use, the traffic will break up the plastic and semi-set concrete patches.

The bulletin continues:

"When it becomes necessary to renew any portion of the pavement with Portland cement concrete, that portion should be entirely closed to traffic, and the concrete should be mixed, placed, and cured in the manner described in the discussion of construction."

Under the subject, "Conclusions," the following items are significant:

"The economic efficiency of concrete roads is undetermined at present, but the indications are that this type of construction will prove to be well suited for certain conditions.

"All types of contraction joints which have yet been devised require careful and frequent attention in order to prevent rapid deterioration of the pavement in their vicinity.

"Thin bituminous wearing surfaces for concrete pavements cannot be economically justified at present."

The above quotations from a recent official report show conclusively that Portland cement concrete roads are not the proper thing for expenditure of millons of dollars of the taxpayers' money.

The government office of good roads has also issued a bulletin, No. 246, entitled:

VITRIFIED BRICK AS A PAVING MATERIAL FOR COUNTRY ROADS

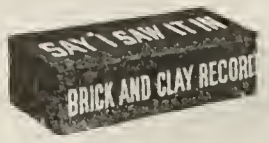
The following extracts need no explanation. They speak for themselves:

"A clay product closely resembling our present-day brick was among the earliest materials used for paving streets and roads. The first brick pavement constructed in this country, however, dates back no further than 1872, and to Charlestown, W. Va., belongs the distinction of having been the first American city to employ brick for paving.

"For a number of years after having been introduced into this country, the use of paving brick was principally confined to city streets, and, owing to frequent inferiority in the quality of the brick and lack of care in construction, very few of the early pavements proved satisfactory. Even now, after the experience of forty years has demonstrated that it is entirely practicable to construct satisfactory brick pavements when proper care is exercised, and that much waste results from the use of poor materials or faulty construction, instances can frequently be found where brick pavements have wholly or partially failed from causes which might easily have been prevented.

"Country roads paved with vitrified brick are becoming quite common in many of our states, and, owing to the general satisfaction which these roads are giving when properly constructed, it is probable that their mileage will continue to increase rapidly. The principal advantages which brick roads possess may be stated briefly as follows:

"1. They are durable under heavy traffic conditions.



"2. They afford easy traction and easy foothold for horses.

"3. They are easily maintained and kept clean, and

"4. They present a very pleasing appearance.

"Not infrequently weak spots develop in broken stone or gravel foundations, owing to surface water finding its way thru joints in the pavement which have not been properly filled with grout. Careful observation of the joints should, therefore, constitute a part of the early maintenance work, and any defective joints discovered should be immediately remedied. Where the foundation is constructed of concrete, however, slight defects in the joints seldom result in any very serious damage.

"If care is exercised to correct all defects which appear within the first few years of the life of a well-constructed brick pavement, the work of maintaining the pavement proper should thereafter, except for cleaning, be almost negligible. The shoulders and drainage structures, of course, need occasional attention, just as in the case of any other pavement, but if they are properly constructed at the start, repairs will usually be very slight.

"The life of a well-constructed brick pavement cannot be estimated with any great degree of exactness, first, because the traffic conditions are constantly changing, and, second, *because no brick pavement which has been constructed in accordance with the best modern practice has yet worn out.* The amounts of wear sustained by given pavements during comparatively long periods of years have been determined in several instances, but have usually been so small as to make the probable terms of service appear almost indefinite."

Can this leave any doubt in your mind as to the proper kind of a pavement to build?

* * *

Prominent Ohio Pipe Maker Dies

Frank B. Hartford, aged 58 years, and one of the best known figures in the sewer pipe and fire brick industry in the Upper Ohio Valley, died of heart trouble suddenly at 4 o'clock on the morning of October 10, at his home in Toronto, Ohio.

Mr. Hartford was born in Wellsville, Ohio, and during the early part of his life his parents removed to Calumet, Ohio, on the Ohio River, at which place he received his introduction and early training in the clay products industry, the industry which he followed thruout life. For some years he was general manager of the old Walker Sewer Pipe Works, near East Liverpool, Ohio, and at different intervals was associated with many clay plants in the Ohio Valley. At the time of his death he was interested in the Pennsylvania Clay Manufacturing Co., whose plants are located at West Winfield, Pa.

While walking about the plant of the Calumet Sewer Pipe Co. about eight years ago, Mr. Hartford was struck by a flying band which parted from a kiln, and since that time he had not enjoyed the best of health. Recently he spent some time at Mt. Clemens, Mich., in the hope of obtaining some improvement, physically, and returned home from Mt. Clemens, September 29, feeling "like a new man."

* * *

A bulletin board that smiles and frowns is a valuable adjunct to contentment. Keep it at a point where all the men will see it at least once each day. Post at frequent intervals points of vital interest to the men, commend exceptionally good individual or departmental work, and discourage poor work.

One of the new ways to make a salt glaze stick, ot keep it from leaving bare spots on Sewer Pipe - - - - is to use

Rollin's Barium Carbonate

The only sure way to prevent face brick scum, to eliminate white wash from your brick-sales - - - - - - is to use

Rollin's Barium Carbonate

Add Rollin's at the Pug Mill feeder—it renders the harmful salts—harmless. Get better results - - - - - - - Ask

Rollin Chemical Company
Inc.
Charleston, West Virginia

General Sales Agents
National Aniline & Chemical Company
244 Madison Avenue New York City

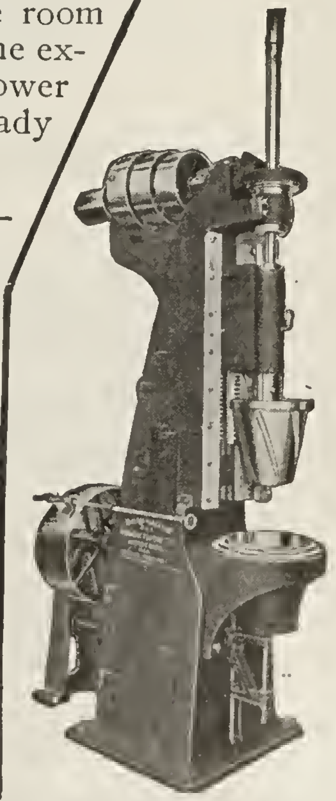
A bi-product that is profitable

Place the machine off in one corner of your plant, and let it absorb the spare time of your machine room men. They soon become expert, and a stock of flower pots quickly collects, ready for the kiln.

It is almost pure velvet—a bi-product—a sure seller with a manufacturing cost low enough to insure a goodly profit.

Send us sample of your clay and let us show you what our flower pot machine will do.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.



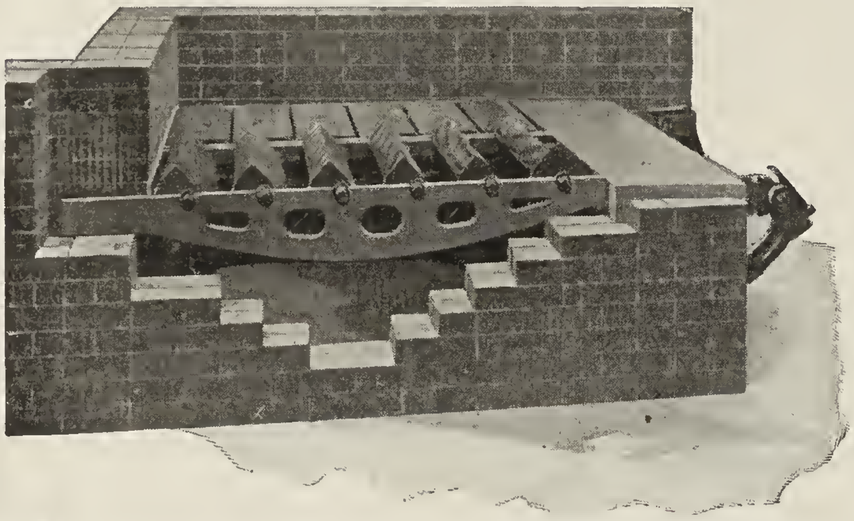
10% of Your Coal Bill
SAVED

GUARANTEED

It may reach 20, 30—even 50% saving—it has in some cases, but we guarantee on 90 days' trial 10% saving

Write today and find out what a big amount these grates will save for you

Cyclone Grate Bar Company
BUFFALO, N. Y.



Gold Medal Award

Panama-Pacific Exposition
for
THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Their Merits are Vouched for by
Hundreds of Satisfied Users
Ask for our New General Catalog No.8

THWING INSTRUMENT CO.
3336 Lancaster Ave. - Philadelphia, Pa.

IN the WAKE of the NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

Luke Knowles, son of George Knowles, well known clay manufacturer of Trenton, N. J., has joined the aviation corps and is now learning to fly. When his training course is completed he will be sent to France for active service.

James R. Marker, commissioner of the Ohio Paving Brick Manufacturers' Association, made a business trip to Cleveland and Northwestern Ohio about the middle of the month. He is investigating the paving situation in that city, with a view of securing a better car supply.

J. M. Adams, secretary and general manager of the Ironclay Brick Co., of Columbus, Ohio, attended the meeting of the board of directors of the American Face Brick Manufacturers' Association held in Chicago during the early part of this month.

Emmet Howard, sales manager of the Claycraft Brick Co., of Columbus, one of the leading spirits in the Rotary Club, visited Chillicothe last week, where Camp Sherman is located, and assisted in the organization of a Rotary Club among the selectives at the camp. The new unit will be operated in conjunction with the Columbus club.

James A. Brown, who had been cashier of the Baltimore (Md.) Brick Co. for more than five years, has been drafted into the new National Army. At Camp Meade, Admiral, Md., where he was sent, he has been given clerical work, but he is anxious to be taught real fighting. He wants to scalp a few Huns before going back to computing brick shipment bills.

General Superintendent R. W. Besley, of the Table Rock (Neb.) Brick and Material Co., made an inspection trip to the clay products plants in Iowa, Illinois, and Ohio. He also bought some additional equipment for his plant. It is intended to increase the capacity of the Table Rock plant to 100,000 brick a day. Recently an order for 2,000,000 vitrified silo tile was received.

George Wilkes, who for some time has been general superintendent of the Stevens' Pottery, and consulting engineer for the Southern Mining Co., left Macon, Ga., recently for Butler, Ga., where he will be engineer for the Golding Sons Co. of New Jersey, in their enterprises near Butler. Mr. Wilkes has been a large factor in the development of the kaolin industry in Georgia, which work he will continue to be engaged in at Butler.

One of the oldest and best known clay products dealers in Howard County some years ago was Aubrey Hopkins, who died the first week in November at his home in Baltimore, Md. Mr. Hopkins once conducted a large business in fire brick, sand, gravel, and other products at Ellicott City, Md., and at the same time was regarded as something of a power in politics. However advancing age induced him to retire,

and in his declining years he devoted himself to farming. He was 70 years old when he died.

Frank X. Brooks, for many years a leading figure in the brickmaking industry in Maine, died at his home in Lewiston, Me., on October 26 at the age of seventy-five years. Mr. Brooks was a native of Vermont but moved to Maine when a young man and established a brick yard at Lewiston, which he conducted until a few years ago when he retired because of advancing years. He prospered almost from the outset and when he relinquished the management of the business he is said to have practically controlled the common brick output in his section of the state.

Warren E. Tarbell, manager of the New England Brick Co.'s interests in Worcester, Mass., was reelected to the lower house on the Massachusetts legislature at the state election November 6. Mr. Tarbell's home town is Brookfield, in Worcester County, and his fellow townsmen already had sent him to the state house for three successive terms. Now he enters upon his fourth. "Practical Politics" recently said of Mr. Tarbell: "When a man has been deputy sheriff for twenty-six years, water commissioner for nine years, selectman for seven years, and a member of the house for three years, it ought to prove two things; first, that the man is popular and possesses the confidence of his friends; second, that he is an able and efficient public officer."

Alabama

A new addition for the manufacture of fire brick has just been completed at the plant of the Roper-Strauss-Ferst Co., Inc., at North Birmingham, Ala. This plant was formerly the North Birmingham Fire Brick and Roofing Co. The plant had been producing hollow tile exclusively, the greater portion of the output going to Atlanta. The new department will produce about 25,000 fire brick a day. The development just finished cost not less than $25,000.

British Columbia

The plant of the Mountain District Brick and Tile Co., of Nanaimo, B. C., was recently totally destroyed by fire, which caused a loss of $25,000. It is expected that the plant will be rebuilt and new machinery purchased.

California

The Southern California Clay Products Co. has been incorporated at Los Angeles, Cal., with a capital stock of $30,000, of which $2,270 has been subscribed. Those forming this new concern include E. E. Madison, J. W. Pemberton, and R. B. Keller.

San Francisco's building permits for the month of October were the smallest of the year, being only $900,509, as compared with $1,137,685 last year. The general business conditions, however, were satisfactory as is shown by the clearings, which at $460,461,517 breaks all past records.

At a recent election the city of San Francisco authorized the issuance of bonds for the erection of twenty-five school buildings and as soon as the architects have finished making their plans bids will be called for. No estimate of the number of brick needed in this work can be made at present. The buildings will be constructed during the coming year.

Louis Steiger, formerly with the Steiger Terra Cotta and Pottery Works, San Francisco, has formed a new company which has taken over the plant of the Vallejo Brick and

Marion

Steam Shovels, Dredges, Draglines and Kindred Machinery

WANT any pointers on revising production-volume *upward* and operating costs *downward?* Universal Brick & Tile Co., Oskaloosa, Mo., can probably give you some! They used to worry along with hand-labor; then they re-equipped their plant, installing a "Marion" and other improvements. Here's the story:—

9 MEN BY HAND, 40,000 BRICK DAILY
7 MEN AND A "MARION," 150,000 BRICK!

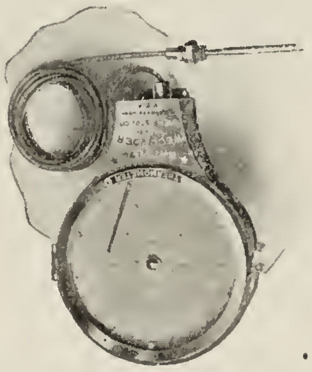
And production has become more uniform, too, because "Marions" do the same good, dependable work down in a hot, stuffy pit as they do out in the open; rain and snow mean little, so long as there's material to be dug.

Do you know what "Marion, the Clayworker's Shovel," can do for *you?* Ask us, now; no obligation!

The Marion Steam Shovel Company, Marion, Ohio

Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle

218 ESTABLISHED 1884



Endurance Under Trying Practical Conditions

One of the features that is best appreciated by the man who pays the bills is the long service given by

TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.

RECORDING INSTRUMENTS

Their rugged simplicity, high quality material and protective casing enables them to stand up for years with uniform accuracy under exposure to heat, dust, smoke, chemical fumes and other hard conditions.

They need just ordinary shop care. There are no delicate parts to get out of adjustment. No experience whatever is necessary to keep them going.

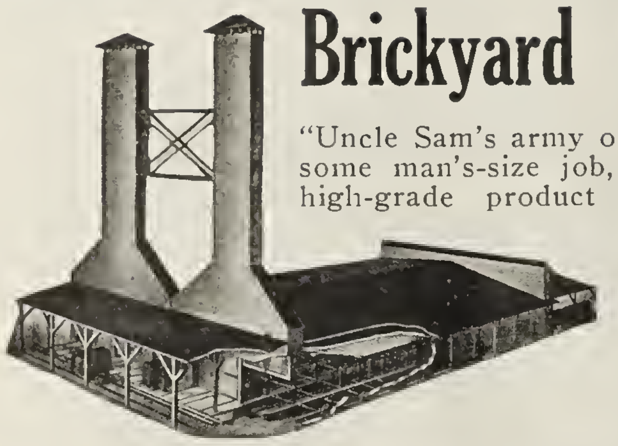
Uniform accuracy has been maintained for years without repairs.

Any engineer or intelligent shop man can erect them.

Bristol's Recording Instruments are being used for recording pressure, temperature, electricity, time, electrical motion, etc. Catalog gives full details.

The Bristol Co. **Waterbury, Conn.**

Branch Offices:
Boston New York Pittsburgh Chicago San Francisco



Brickyard Bill Says:

"Uncle Sam's army off'cers has sure got some man's-size job, makin' a uniform high-grade product out o' all them diff'runt v'rieties o' green, m'terial. But it kin be did. Th' Standard Brick Drier's been a-doin' it f'r thutty years."

The Flexible Heating System of

The Standard Drier

makes it applicable to ALL clays and ANY steam conditions. There is nothing theoretical about The Standard Drying System. The piping is applied in the manner that our long experience has demonstrated to be most efficient in meeting the requirements of the various natures of clays. The heating apparatus is FITTED to the NEED in every case.

Write for complete description and free estimate. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.
Cleveland, Ohio
Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

Tile Co., and the manufacturing of brick has been started. George Sutter is superintendent of the plant. A number of improvements are to be made in the plant in the near future.

N. Clark & Sons, San Francisco, announces that they are cleaning up the debris of their ruined plant preparatory to rebuilding. The plant was practically destroyed by fire several months ago and since then the adjustment of the insurance has kept the company from rebuilding. This matter now has been satisfactorily adjusted, and as soon as the site is cleared up rebuilding will commence.

Mayor Rolph, of San Francisco, Cal., and a committee of prominent citizens are busy getting subscriptions to the $150,000 fund guaranteed for the purpose of constructing an outlet sewer at Camp Fremont, in connection with the government cantonment at that place. This outlet sewer will be of tile and the contract for it will be awarded as soon as the government has the money in hand to pay for it. All the other tile to be used in this camp are already in place.

The Los Angeles (Cal.) Pressed Brick Co., which operates a plant for the manufacture of clay products at Alberhill, Orange County, has filed with the Railroad Commission a complaint against the Atchison, Topeka, and Santa Fe and the Southern Pacific Railway companies, asking the commissioner to fix rates for the shipment of clay products from Alberhill to points east and south of Colton, San Bernardino County. The action is being watched with considerable interest by the brick interests in that section of the state.

Colorado

The Fossil Creek Brick Co.'s plant at Fort Collins, Col., has been overhauled and newly built and is now turning out a first class red brick as well as a grey and speckled brick. This plant is managed by A. H. Kruger.

Connecticut

Thru the agency of H. Dayton Humphrey, Harry Sperry, a junk dealer of New Britain, Conn., has purchased the property of the old New Britain Brick Co. in Clayton from Hattie E. Richards. The property has a railroad frontage of about 2,000 feet. Mr. Sperry plans to develop the premises so as to utilize this railroad facility.

The City Bank and Trust Co., of Hartford, Conn., has obtained judgment in the superior court for the foreclosure on a mortgage of the so-called East Windsor Hill brickyard, South Windsor, Conn., belonging to Joseph A. Lahey and other heirs of the late William Lahey, of New York. The mortgage was for $17,835.

Delaware

The Waltstone Refractories Co. has been incorporated, with a capital of $600,000, at Dover, Del., to manufacture brick and tile.

Illinois

The George Keller Pottery Co. is the name of a new corporation launched at Chicago, Ill. A capital stock of $10,000 represents the amount subscribed. The incorporators include Curt Juhl, Walter H. Schultz, and Adolph J. Borgmeier.

Indiana

R. E. Boyd and associates, owners of the Iroquois Coal Co., have purchased the plant of the Loogootee (Ind.) Brick and Tile Co. This plant formerly manufactured drain tile but the new owners intend to use it exclusively for the manufacture of fire brick. The clay will be obtained from an eleven foot vein occurring in the mine of the Iroquois Coal Co. at Cannelburg. This vein of fire clay is overlaid by a strata of about thirty inches of coal which will be saved when the fire clay is taken out. Gustave M. Risacher, one of the retiring stockholders, will be the local manager of the plant.

Judge Ellis of the superior court has approved the sale of the property of the Indiana Brick Co., at Anderson, Ind., to Neil McCullough for $36,872. This is a subsequent bid to one made by John Alldredge when the property recently was offered by J. J. Netterville as receiver, at public auction. The Alldredge bid was $33,520, and was the highest of two bids submitted at that time. Receiver Netterville will now proceed under direction of the court to settle up the affairs of the brick company. The buildings and machinery of the brick plant, for which a former bid of $6,080 was offered, were sold by Mr. McCullough for $12,000. The property was purchased by Max Ziegler of Muncie, who will dismantle the plant. In the purchase of the property, Mr. McCullough is supposed to represent the Citizens bank which was a creditor of the Indiana Brick Co.

Iowa

The Redfield (Iowa) Brick and Tile Co. is adding a new kiln to its plant.

The American Brick and Tile Co., Mason City, Iowa, has filed amended articles of incorporation, increasing its capital stock to $500,000.

Members of the Iowa Face Brick Association held their regular meeting in Sioux City, Nov. 13. The unlucky date was a hoodoo; on account of the small attendance but little business was transacted. A point in Sioux City which was of great interest to the visiting brick men was the new Woodbury County court house which is just nearing completion. This building is one of the finest illustrations in the Central West of the beauty of face brick, which has been used on both the interior and exterior of the structure. Altogether 500,000 face brick were used in its construction. The Sioux City Brick and Tile Co. furnished the brick.

Kansas

The county commissioners of Pawnee County, Kansas, unanimously adopted a resolution at Larned recently, which favored a hard surface road thru Pawnee County by way of the Santa Fe Trail, a distance of twenty-eight and one-half miles, to join with the brick road recently provided for by Barton County. Steps will be taken at once to procure signatures to petitions for a brick road thru the county.

Many counties in the state of Kansas are interested in hard-surfaced roads this year and eleven are now contemplating brick paving for their highways. Paving experience in Kansas towns has given much popularity to this type of pavement due to its serviceability. Many of the counties now taking up paving work are outlining a program for several years in the future and are looking forward to making the principal highways of the territory permanent.

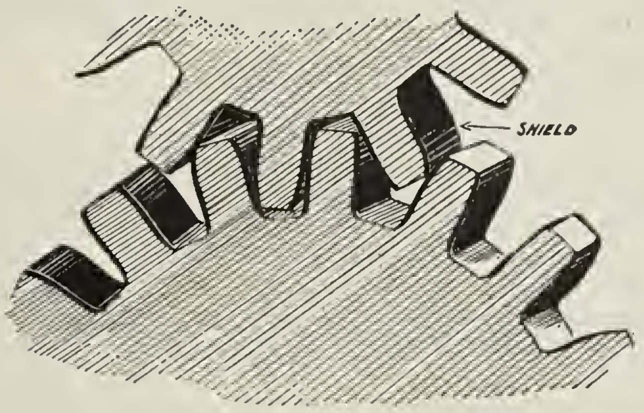
The big fleet of bake ovens and open furnaces for cooking that are now under construction at Camp Funston, Kan., are being built mainly of brick. A few were constructed of concrete, but the engineers with the work in charge later changed from concrete to brick. These furnaces, besides

Do You Use
Rino Gear Shield—
Why Not?

It is a lubricant compounded especially for use on clayworking machinery, steam shovels, etc. It will stay where it is put, forming a shield that protects the gear teeth from wear, reduces noise, and thoroughly lubricates. Dozens of satisfied clay plant users. No grease is necessary.

Ask Today for Sample and Prices

THE OHIO FILLER & SHIELD CO.
COLUMBUS, OHIO



Your Fortune For Coal Or Use Canton Shaking Kiln Grates Which?

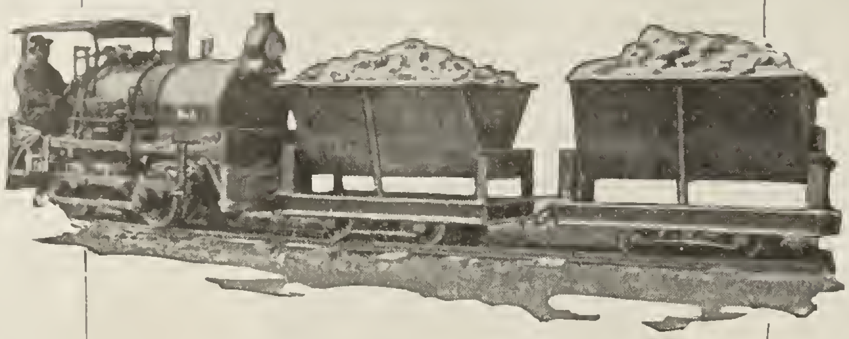
One of the very prominent refractory men says: "It is simply beyond my comprehension why otherwise good plants still use old methods. We are saving over 25% of our fuel with Cantons, amounting to thousands of dollars each season.
Get our bulletins.

The Canton Grate Co.
1706 Woodland Ave., Canton, Ohio
Southern Representative:
Mc BURNEY & JONES
Efficiency Engineers
829 Trust Co. of Ga. Bldg.
Atlanta, Ga.

The Hard Pulling, Low Cost

Bell Steam Locomotive

Requires no licensed engineer as it is simple and easy to operate, and it burns a low-priced kerosene oil.



Your efforts will be reduced, your haulage problem will be simplified, your labor requirements lessened—all at a lower operating cost. If you do not understand thoroly, ask us for explanation. Now.

Bell Locomotive Works, Inc.
30 Church Street New York

A Red Stitched Canvas Belting

HETTRICK

It should be in service on your pulleys and an adequate reserve supply in your store room. It has no equal for **what you want in a belt.**

The Hettrick Mfg. Co., Toledo, Ohio

being erected for the purpose of baking bread for the troops, are also used for cooking other foodstuffs in the preparation of the meals. Bread is one of the big items that enter into the food supplies for the troops. Before the big ovens were constructed the bread furnished the troops was costing more than nine thousand dollars a day.

Kentucky

The Rosehill Brick and Tile Co., Harlan, Ky., of which W. D. Landrum is manager, has leased the plant of the Rosehill (Va.) Brick Co., for two years, with the privilege of extending this term over five years.

Materials required in an extensive addition to the United States Government Quartermasters' Depot, at Jeffersonville, Ind., just across the Ohio River from Louisville, will include 2,500,000 common brick. The general contract went to the Alfred Struck Co., of Louisville. It is to be a hurry-up job, involving erection of a series of warehouses to cover something more than ten acres, and the contract required that the work shall be completed in sixty-five days. This means that quick deliveries must be made. Contracts are to be let shortly. One Louisville manufacturer negotiating for the order has a stock of about a million brick.

Something in the way of an improvement has been brought about in the coal supply situation in Kentucky, altho the advance in the price has been rather trying to the trade. Wiley Bryan, formerly assistant treasurer of the Belknap Hardware & Manufacturing Co., of Louisville, has been appointed Federal Fuel Administrator of Kentucky and has named a series of subordinate officers to help him in carrying out the work. By his assistance the plants that must have coal are being provided with it, altho in limited amounts. Continued mild weather has helped the coal market to the extent that it has decreased the insistent demand for domestic coal.

There is a great deal of building activity in Winchester, Ky., which is probably the busiest town in the state this fall. There is not a street in this thriving Bluegrass center that has not one or more new residences under construction, most of them being of brick. The reason is that the oil boom in counties adjacent to Clark County has drawn prospectors and oil men to Kentucky by the hundreds and they have found that Winchester is the best center from which to reach the oil-producing sections. A considerable proportion of the oil men have been fortunate in their investments and the rush has been a profitable one. Residences, hotels, and lodging quarters have been at a big premium in Winchester for some months and the result was the spurt in building. An estimate places the amount of work done in the last six months at half a million dollars. Some materials are scarce or it is declared there would be more building activity than at present.

Maryland

Brick dealers in Baltimore, Md., are now predicting that the two-story house building business which had such an unprecedented slump this fall, will witness a big revival in the spring. They base this theory on the fact that some of the building materials have been reduced considerably in price, and they believe there will be a lessened strain in labor, especially in skilled labor, which will permit the smaller builders to go ahead without serious trouble. They also believe there will be greater confidence among the home buyers, because the war will have settled itself into more stable conditions by that time, and the average man will not be afraid to invest his savings. It will be noted in the report of the Building Inspector in Baltimore for October that only $20,000

was spent on two-story brick dwellings in that month by builders. In October this tide of building always reaches the flood, and there are usually hundreds under construction. The optimism of the dealers seems to be general thruout the trade.

Massachusetts

The largest transaction reported in the vicinity of Boston, Mass., for the past few days is that of a sale of 1,750,000 brick to be used by the American Woolen Co. in the erection of a mill at Maynard, Mass. The strike of the steel workers at Watertown and the stationary engineers in different places has resulted in a marked shrinkage in the deliveries of brick in and around Boston. For common brick delivered on the job in this city the price is $14.

Missouri

The Walter S. Dickey Clay Manufacturing Co.'s plant at Kansas City has been operating on a part time schedule because of the coal shortage. The operating hours have been increased of late, however, and the plant is now running almost to capacity.

The Western Paving Brick Manufacturers' Association, with offices in the Dwight Building, at Kansas City, reports that its plants scattered thru the southwest territory, have resumed operations on the increased production scale in proportion to the amount of coal that has been shipped during the past few weeks.

The brick companies at Kansas City have not yet announced any material increase in the prices. However, it is the consensus of opinion that the month will yet bring the price of common brick to the twelve-dollar mark. It is also considered very probable that another increase will be made in hollow building tile.

Some of the brick plants about Kansas City have announced that they are now working on a better schedule than they have been able to do for some time, due to the relief from the coal shortage. Still, there are a few that have not yet been able to begin operations since closing their plants, altho it is announced that they expect to begin again the latter part of the month.

Building permits have fallen off almost fifty per cent. during the past month in Kansas City, Mo. The building being done at this point is mainly apartments of brick construction. The real estate board declares that while there is no great increase in rentals at the present time there is a very large decrease in the amount of available rental property at Kansas City. The board is encouraging the building of apartments.

The past few weeks has brought some relief from the coal shortage to the Missouri clay plants, from which they have been suffering for several weeks to such an extent that production has been lowered and, in some cases, plants closed. The supply that the companies now have on hand will insure the operation of the plants for but a short time. The contract under which the miners in this territory are working is one that the federal coal administrator frowns upon to such an extent that the government has refused to acknowledge or accept it unless the penalty clause for the miners refusing to work is inserted. The miners declare that they will not sign a contract containing this clause and there is a possibility that another strike being declared. The miners and operators are now in conference regarding the contract and the result will be known within a short time.

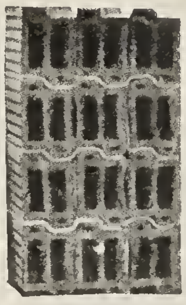
While the brick market in St. Louis, Mo., is rather quiet at the present, there is no lack of activity at the manufac-

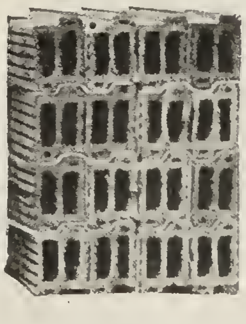
Tycos
FERY RADIATION
PYROMETERS
Eliminate Guesswork from the Manufacture of All Products requiring extremely high Temperatures * * * *

We Manufacture - Thermometers and Instruments covering every Temperature requirement in Metallurgy and Chemistry

A Catalog Cheerfully Sent Upon Application

The Taylor-Cambridge Division
Taylor Instrument Companies
Rochester, N.Y.





Is Your Territory "Loxall" Licensed?
Better write us and find out.

"LOXALL"

is your idea of a good proposition.

It is easy to make, easy to dry, easy to burn—and it is easy to sell.

Every state is to be licensed—Let's talk it over.

J. E. Exner
602 Lincoln Street
Coffeyville, Kan.

Loxall is patented in the U.S.A. and Canada

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

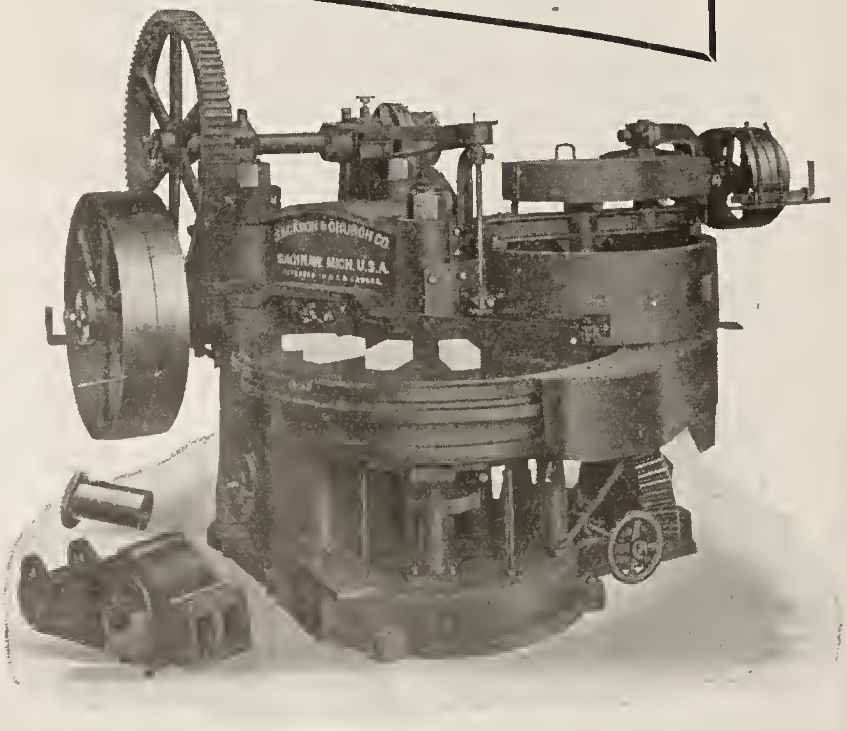
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

turing plants in this vicinity, owing to orders that have been received during past months for materials for the use of contractors engaged in building structures for the government. W. Pocock, secretary of the Brick Manufacturers' Association, states that there is little or no activity in the building line among private builders, and consequently but little new demand for structural clay products. The recent fluctuations in the steel market have discouraged many prospective builders from taking steps to carry on their operations. There are practically no new private enterprises reported and building generally is looked upon as a very dubious proposition. In St. Louis, a number of manufacturing plants and semi-public institutions, such as the Pullman company are erecting new plants, which call for large quantities of brick and this is keeping some material moving in the local market, but when these jobs have been supplied, it seems likely that the market will be idle. All this despite the fact that there has been little increase in the price of brick as compared with almost everything else. The only increase in list prices made by manufacturers so far has been that necessary to cover the increased costs of manufacture. Present orders and future anticipations, however, are keeping all the clay burners busy in this section, and manufacturers report that the brick yards are turning out the usual amount of brick and expect to continue at the same gait.

New Jersey

The Mutton Hollow Fire Brick Co., Woodridge, N. J., has nearly completed a continuous tunnel kiln for burning fire brick.

The Atlantic Terra Cotta Co., of New York, is now operating its plants No.s 2 and 4 at Perth Amboy, N. J. At these plants it is manufacturing refractory shapes and fire brick exclusively while at its No. 1 plant, Tottenville, N. J., and its No. 3 plant at Rocky Hill, N. Y., its efforts are confined to the manufacture of terra cotta. This company reports a heavy demand for fire brick.

Building operations in and about Paterson, N. J., are still firmly held in the grip of lethargy. There is little promise that the stagnant condition will be overcome—it is too near winter and too large a bulk of workmen engaged in building lines are at present at work for the government at Camp Merritt. As long as that immense project is in progress it will be difficult to secure sufficient builders to do any important work in Paterson. However, a slight ray of hope emanates from the action taken by the Paterson Chamber of Commerce, which has officially declared that something must be done to improve conditions before the new factories, now in the process of erection, are ready for operation. The chamber discovered that no apartment houses are available and that the scarcity of single and double houses removes them from the list of possibilities for habitation. Rents have also been found to have advanced to a figure which it is impossible for the workmen to meet. No official action has as yet been taken and the supposition is that the chamber will exert its influence to secure the erection of sufficient houses next season to partially overcome the shortage.

Of great interest to the clay miners and manufacturers in New Jersey is the recent action of the government in using the Delaware Raritan Canal, which for many years has been regarded as useless. For some purpose not yet divulged, U boat chasers are now being sent thru it. This specific action of the government is not of so much importance as is the great interest which it stimulates in our water system of transportation. For years the reasonable good inland canal system of New Jersey has been abandoned in favor of railroad transportation; but the exigencies which have been brought about by war conditions have caused an awakening of interest in favor of inland water ways. Shippers of clay and clay products in that section would derive great benefit thru the restoration of canal transportation. Their product is of such a nature that it could be shipped by water without suffering deterioration or in quality, because of lack of speed. Not all producers are located along the canals but some of the largest would be benefited and others would feel the effects indirectly, because the amount of traffic from which the railroads would be relieved would make it possible for them to handle other shipments more expeditiously. It is hoped that the rehabilitation of New Jersey's canal system will be effected in the near future.

New York

The Albany (N. Y.) Clay Products Co. is again in operation, now manufacturing flower pots, for which it reports a number of orders ahead.

The McLeod & Henry Co., Troy, N. Y., has filed notice of an increase in its capital from $50,000 to $150,000, for expansion purposes. The company specializes in the manufacture of fire brick.

A recent rain is supposed to have damaged 147,000 brick in the drying yards of the Rose Brick Co., of Newburg, N. Y. The Jova Brick Works of the same town is also stated to have lost a large quantity of brick when the high tide rose above their drying yards at the north end.

Ohio

The defeat of the $3,500,000 bond issue for new school buildings is one of the many things that has put a crimp in Ohio building operations.

Demand for common brick in Ohio territory still continues rather active. This is due to the larger number of additions to factories which are going up and have been projected. The price of common brick still continues between $11 and $12. Stocks on hand are not large.

Arrangements are being made by Columbus and Ohio face brick manufacturers to attend the annual meeting of the American Face Brick Manufacturers' Association, to be held at French Lick, Ind., December 12 to 14, inclusive. The attendance from the Columbus and Hocking Valley fields will be larger than usual because of the number of complicated problems which confronts the trade at this particular time.

The car situation in Ohio is constantly becoming worse Little material is moving, except when the shipment is authorized by the federal transportation administration. Of course fire brick used on government work has the right of way and manufacturers are getting plenty of cars. Brick for commercial purposes cannot be moved, as the car supply at most of the plants is almost nil. So it goes and there are no prospects for improvement.

The Claycraft Brick Co., of Columbus, Ohio, which operates plants at Shawnee and Groveport, Ohio, is contemplating closing down its plants during the winter season because of the shortage of coal, labor scarcity, and lack of shipping facilities. In fact, the face brick business is at a standstill and for that reason operations at many face brick plants in the Buckeye State will be discontinued during the coming month unless relief is afforded. Steps may be taken to close down most of the face brick producing plants which are not now engaged in the manufacture of fire brick.

"Full Speed Ahead"
Says Uncle Sam
"Aye, aye, sir"
replies "On-the-Job" GANDY

"SPEED is my middle name.

"You, Mr. Producer, see that your power is top notch and steady—that your shafting and pulleys are true.

"You can then put your faith in me for full production and uniform quality—war-time results Uncle Sam wants.

"As to credentials, I can bring you a thirty-seven year accumulation from every representative industry in almost every country on the globe.

"They'll tell you I'm the sturdy, long-lived power and material belt that's built to get *all the pull from the pulley.*

"Don't delay—send for me now through your supply house or order direct.

"My painted green edge and well known trade mark will tell you at a glance that I'm the genuine *'On-the-Job' Gandy* original stitched cotton duck belt."

*Write for prices
and samples*

The Gandy Belting Co.
732 West Pratt Street
Baltimore, Md.
New York Branch: 36 Warren St.

Your Coal Troubles Are Not Over

The tentative prices made by the government do not insure against shortage next winter.

You will have difficulty in securing the coal necessary to the operation of your plant.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

The Ohio State Brick & Stone Co., of Columbus, which recently acquired the face brick plant of the New Lexington (Ohio) Clay Manufacturing Co., is making extensive improvements and will be in a position to ship fire brick in a few weeks. Some new machinery is being installed and the old machinery is being turned from the production of face brick to the new work of making fire brick. The clay is being shipped from the flint clay mine at Moxahala to both the New Lexington and Shawnee plants. Strictly No. 1 fire brick are being turned out at both plants. C. B. Young is general manager, while R. W. Kelly is sales manager, in charge of the Columbus office.

The Excelsior Fire Clay Co., with headquarters at Lisbon, Ohio, has been re-incorporated at Columbus with a capital stock of $30,000. F. R. Shunk and J. R. Sprankle, of Cleveland, who are interested in the Saratoga Fire Clay Co., of Lisbon, are president and vice-president of the Excelsior company. Fred G. Davis of Lisbon is treasurer and Walter L. Ogden, former sole owner of the Excelsior plant is secretary and general manager of the new company. The concern will feature the manufacturing of chimney tops and flue linings, and it is possible other specialties will be added as soon as the capacity of the plant is increased. An excellent acreage of clay is obtainable, and with a steady market, the concern will be operated full time.

Oregon

A new concern called the Molalla (Ore.) Fire Clay Co. has been established to manufacture a variety of stoneware for household and other purposes. It is said that the fire clay deposit at Molalla is one of the few located west of the Mississippi River suitable for the manufacture of this type of ware.

Pennsylvania

The Reading (Pa.) Fire Brick Co. is planning for the complete electrification of its plant. The company proposes to make several extensions in the near future to provide for increased capacity.

The Waltstone Refractories Co., Philadelphia, Pa., has filed articles of incorporation in Delaware with a capital of $600,000, to manufacture brick and tile. The incorporators are Wray C. Arnold, Frank J. Riera, Jr., and M. Elliott, all of Philadelphia.

After several months of delay due to transportation and labor conditions brought about by the war, the Kittanning Ceramics Co. has completed the initial unit of its new plant situated on the B. R. and P. railroad, a mile and a half east of Cowansville, Pa., and about twenty miles from Butler, Pa. The company has already started to manufacture fireproofing and face brick on an extensive scale. Butler and Kittanning capital is chiefly interested in the new concern, which is capitalized at $50,000. The incorporators and officers of the company are: Irvine Campbell of Kittanning, president; Harry L. Kelly, of Butler, vice-president; J. S. Porter, of Kittanning, secretary and treasurer; H. S. McNees, of the Kittanning Brick Co., manager and superintendent, and R. S. Cornelius, of Butler. The company has acquired a title to a tract of land comprising sixty-three acres, a mile and one-half east of Cowansville, in Armstrong County. This property is underlaid with a deposit of shale one hundred feet in thickness.

Texas

The Texas Clay Products Co., of Malakoff, Tex., has increased its capital stock from $75,000 to $125,000. The increase in capital is all paid in.

Vermont

The Rutland Fire Clay Co., of Rutland, Vt., has found it necessary because of increasing business to add materially to its buildings and equipment. Men are now engaged in erecting a new storehouse, 200 by 300 feet, near the mine about two miles east of the city, to be completed during the winter and ready for use in the spring. This building will be two stories high, the lower story of cement and the upper of wood and it will be used for the storage of the raw material as it comes from the mine. Close by, eight new dry sheds, each 12 by 104 feet, are to be erected.

Washington

Ten carload shipments of fire brick were consigned from a point in California to Crocker, Wash., to be used in the construction of coke ovens which are being built for the Carbon Hill Coal Co. The shipment reached Tacoma, Wash., via the steamer Hoquiam.

Seattle is building steadily, and, notwithstanding war conditions, it continues to use brick in about the same quantity as in times of peace. The month of October tells the tale, with building permits for $509,405. While this is somewhat below the September figure it was exceeded by only four other months in 1917.

Alexander R. Batley, of Tacoma, Wash., is sponsor for the story that women are being used to make brick at Bellingham, Washington. He says that the brickyard there could not get men and tried the experiment of employing women. The sisters and sweethearts of Swedes, who were working in the neighboring lumber camps, were put to work until a force of thirty was busy digging clay and pushing cars.

The main buildings of the Washington Brick, Lime and Sewer Pipe Co., at Dishman, near Spokane, Washington, were totally destroyed by fire the early part of November. The loss will amount to $100,000. The factory will be rebuilt as soon as possible. The main building was 250 by 80, and was four stories high. Speaking of the cause of the fire, which has not yet been discovered, L. A. Spear, secretary of the company, said: "We are filling no war orders at all and do not think the fire was incendiary. The main building in such a plant is in reality a huge drying room and burns rapidly when a fire starts."

West Virginia

The Municipal Shale Brick Co., Martinsburg, W. Va., has commenced the construction of a large new thirty-kiln plant. The plant is estimated to cost $250,000 when completed.

Wyoming

It is announced that the Casper (Wyo.) Brick and Tile Co. has started work on the erection of a new plant which will be constructed on the banks of the North Platte River, about three-fourths of a mile from the Burlington depot. Machinery of modern design has been contracted for from an eastern company. The plant, which will have a capacity of 60,000 building brick and about 15,000 feet of building tile a day, is expected to be ready for operation by March 1. The company's capital stock of $50,000 is fully subscribed, the stockholders being local business men.

⁂

Jiggs—What's a good play for a tired brick dealer to see?

Biggs—Common Clay.

Nervous Mrs. Jiggs—I hope there's no kil'n in it!

"This core is as good as new, George. Did CLING-SURFACE keep it that way?"
"Sure – this rope ran in the open for 5 years, too."

GEORGE knows!

He had the care of their belts
and ropes.
The firm had a rope drive on the roof
in Buffalo,
exposed to rain, wind, sleet and snow
off Lake Erie,
and smoke from the nearby factories.
These things hurt a rope drive.
They dry out the greases
and the fibres grate together.
The "core" is ground to powder.
The rope becomes hollow, limp,
DANGEROUS—it is no longer strong.
But by treating it with CLING-SURFACE
these fibres were kept lubricated.
They did not grate,
but slid like a well oiled bearing,
and the rope lasted.
After five years on the roof it was
still good for service
because of CLING-SURFACE.
This semi-liquid
"easy-to-use"
belt and rope treatment
will also prevent slipping
and let you remove some of that tension.
Ask for our Rope Folder P384
or order a can for 60 days' trial.
Remember,
use CLING-SURFACE
and you won't need belt or rope dressings.

Cling-Surface the life preserver for belts TRADE MARK

Cling-Surface Company
1029 Niagara Street
BUFFALO NEW YORK U S A
(Copyrighted 1917 by Cling-Surface Company)

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.20
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.50
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scumming and Efflorescence	.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, Book Department,

Brick and Clay Record
445 Plymouth Court, Chicago, Ill.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

New Hoffman Type Kiln

The firm of Webster and Kincaid, 407 Greenwood Building, Cincinnati, Ohio, is introducing a Continuous Kiln of the Hoffman type.

Some new features are incorporated that are expected to greatly reduce the already low fuel consumption of this type of Continuous Kiln, the changes being chiefly concerned with the generation and delivery of the side fire heat, and with the draft flues.

This firm is also handling a line of clay machinery and equipment that will be exceptionally complete.

⁂

K. B. Pulverizer Moves to Philadelphia

On November 12th last, the K. B. Pulverizer Company of New York transferred their office address to 2009 Market street, Philadelphia, Pa.

The conditions of manufacture, sale and service are very superior to those obtained at the old address in New York City, and consequently added satisfaction goes with each new sale of the "All Steel Hammer Mill."

⁂

Link-Belt Company Helps Overscribe Liberty Loan

The employes of the principal plants of the Link-Belt Company subscribed $236,700.00 to the Second Liberty Loan.

The company itself subscribed $32,300.00, the total amount of both firm and employes amounting to $269,000.00.

This is surely a remarkable instance of true patriotism, an indication that the Link-Belt Silent Chain Drive and its makers, do drive.

⁂

Vest Pocket Information on the Du Pont Companies

There has recently been issued a handy little booklet which contains a list of all the products manufactured by the E. I. du Pont de Nemours and Associated Companies, namely Du Pont Chemical Works, Du Pont Fabrikoid Company, The Arlington Company and Harrisons, Inc.

Of course this booklet does not indicate who uses the products or how used, as does the Du Pont Products Book, but it will no doubt prove of interest as well as of value to many mercantile and industrial men. It is small enough to fit in a busy man's pocket. It will be sent upon application to the home office at Wilmington, Del.

⁂

Wellington Wins Suit

A court matter of considerable interest to the clay-products industry has just been finally adjudicated in favor of the Wellington Machine Company, of Wellington, Ohio, manufacturers of soft-mud brick machinery.

Suit was brought against the Wellington Machine Company by the Arnold-Creager Company for infringement on their soft-mud machine. Judge Clarke, of the Federal Court, decided in favor of the Wellington Company, and the case was carried to the U. S. Circuit Court of Appeals, which has just sustained Federal Judge Clarke's decision.

This is a matter of great interest to the friends of the Wellington Machine Company, whose machines have become so extremely popular after their many years' successful use in clayworking sections where soft-mud brick are manufactured. The "Wellington Special" No. 7 is a machine with a daily capacity of 60,000 brick, and is in use in the finest soft-mud plants in the country. Several additional sales have been made this season, and the fact that some of these have gone to companies that have been using the Wellington machine in the past, is sufficient evidence of the worth of the Wellington product.

* * *

Hercules E. L. F. Explosives

On account of the greater efficiency and increased safety which can often be secured through their use, Low Freezing explosives should be given careful consideration by all users of explosives whose operations are located where even moderately cold weather is encountered.

It is well known that ordinary dynamite and gelatin dynamite will freeze and become less sensitive at temperatures between 45 deg. and 50 deg. F. It is not so widely understood that such dynamite may be chilled to an extent that materially lessens its effectiveness without becoming hard and without exhibiting any physical difference that would readily distinguish it as being in poor condition. Thousands of pounds of these chilled explosives are used every year and thousands of dollars are lost on account of the decrease in the work they are able to perform.

Under the best conditions, on large operations where the most approved equipment for thawing is installed, the process of thawing dynamite entails extra cost and labor and increases the possibility of accidents. Under conditions that are encountered on many operations, where the thawing is left to the men and where thawing methods are resorted to which have been vigorously condemned both by the Government and by the explosive manufacturers, there is an enormous loss thru accidents and thru inefficient execution by incompletely thawed or frozen dynamite. On this subject the United States Bureau of Mines gives a warning in Miners' Circular No. 7, from which we quote:

"The thawing of frozen explosives requires extreme care, and an improper method has frequently led to very serious accidents." * * * "During thawing nitro-glycerin tends to separate from the dope and run out of the cartridge (that is, to exude), and this is a source of danger."

On the other hand, the use of frozen explosives is a very dangerous as well as an uneconomical practice. The following is from the same circular issued by the Bureau of Mines.

"Frozen high explosives may be set off by friction on the side of the hole or by coming in contact with a metal tamper; friction will sometimes explode them when a detonator will not. For this reason it is dangerous to break frozen explosives with the hands."

It should be added that it is dangerous to punch a hole in a frozen stick of dynamite in order to insert the primer. Regarding the inefficiency and danger of using partly thawed explosives, the Bureau of Mines says:

"Although some explosives can be exploded when partly thawed—that is, when the sticks feel soft on the outside tho the interior is still frozen hard—the work they do when so fired is not efficient, and there is great danger of accidents during priming and of misfire."

Hercules E. L. F. explosives will not freeze until water freezes. In actual use they often remain unfrozen at much lower temperatures, but as the length of time during which they are exposed to extreme cold is a factor which enters into this, and as it is rarely possible to get accurate records of this after the goods leave the hands of the manufacturer, they prefer to understate the merits of their goods in this case, rather than to run the risk of being accused of overstating.

The advantages of using dynamite that will not freeze until after water freezes, is recognized by practically all large users of explosives whose operations are carried on in freezing temperatures. Hercules E. L. F. explosives are particularly called to your attention for use during seasons when the temperature at night or in the early morning falls below 50 deg. F., although the days may be warm. The re-

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—

The hand poked type.

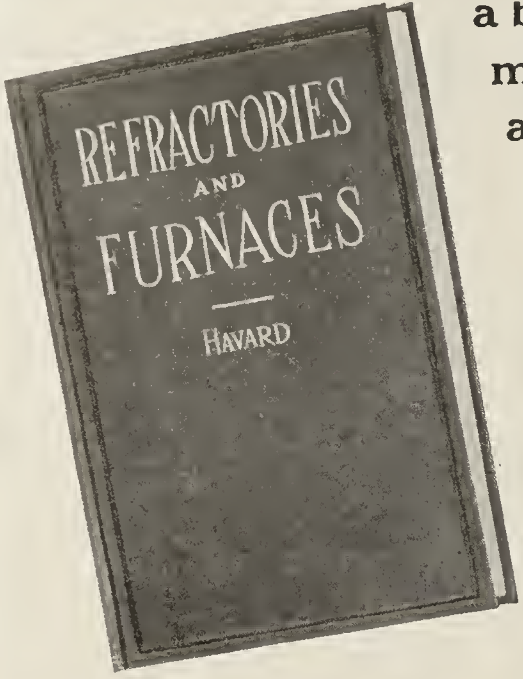
For large installations—

The mechanically stirred producer.

R. D. Wood & Co.

400 Chestnut Street
Philadelphia, Pa.

To the man who wants to know —who must know — who is determined that *he will know more* about the manufacture and use of refractories



WE OFFER THIS BOOK

Havard's

Refractories and Furnaces

To briefly outline its contents—It clearly describes and illustrates the preparation of silicious refractories, refractory clays, and basic and neutral refractories.

It describes the **kind of refractories used,** and their application in the manufacture and metallurgy of iron, steel, copper, lead and silver.

It tells about the refractories used in Chemical and Electro-Metallurgical industries. And then it describes the manufacture of refractory hollow ware, heat measurement, mining, and finally the making and burning of common clay brick.

We do not believe that a more valuable book could be purchased, and we are enthused over this idea—it should be in every single clay products plant in the United States, whether you manufacture refractories or non-refractories, you cannot afford to be without it.

Send $4.00 to

BRICK & CLAY RECORD
BOOK DEPARTMENT
610 Federal St. Chicago, Ill.

peated chilling to which dynamite is subjected under such conditions results in a material lessening of its effectiveness except in the case of the E. L. F. grades.

In response to a persistent demand for explosives that will not become insensitive at low temperatures, and which will meet all the requirements fulfilled by the ordinary kinds, the Hercules company have developed E. L. F. explosives to correspond with all the nitro-glycerin and Extra grades of Dynamite, Gelatin Dynamite and Permissable Powders. These sell at the same price as the regular grades to which they correspond. They are recommended in the belief that an increase in their use will result in increased satisfaction.

⁂

Aerial Wire Rope Tramways

Every man in a responsible position on a clay plant is more than ordinarily anxious to find out the details of labor-saving appliances.

Any method or machine that will do something better, is eagerly investigated in a broad-minded manner with the expectation that means may thereby be found to equalize continually rising costs.

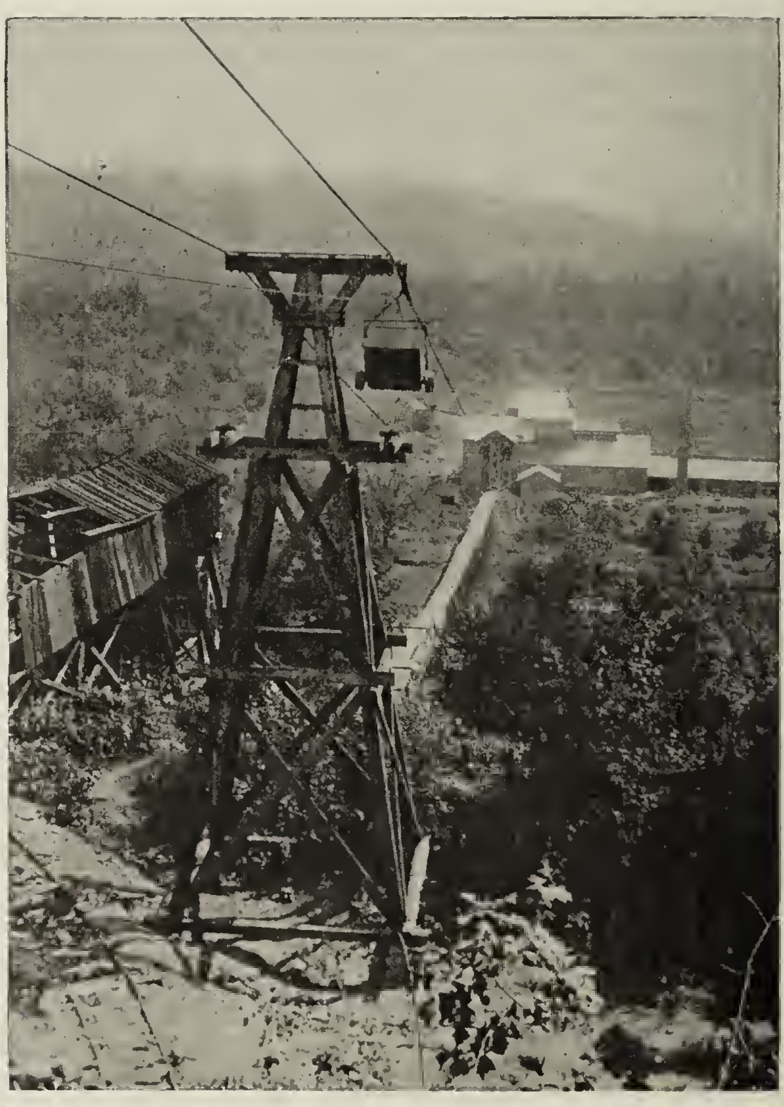
How can things be done more easily and at less expense, is a common question, and it must be solved. In the transportation of raw clay particularly there is a great expenditure of both man power and money.

Expensive methods of getting in the clay are very often an inheritance of the past, old methods are in use and are forgotten, no attention being paid to them because they are fixtures—"the way we always have done it."

Clay pits of course are constantly changing, pits that used to be close to the plant, actually at the back door, are now located at considerable distances, and sometimes half to a mile distant.

There is a way, one best way to get that clay to the plant in the most economical way, at the smallest expenditure of equipment, men, and power.

In a book just published The Broderick & Bascom Rope Company of St. Louis, Mo., show in detail analysis and in dozens of photographs of actual installations, the method of working the B. & B. aerial tramways. The booklet will be mailed to you gratis. Perhaps this method is just what you need."



Special Application of B. & B. Two-Bucket System in Use at Brick and Tile Plant

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other Tuesday by

Kenfield-Leach Company
610 Federal Street Chicago

Chicago, December 4, 1917
Vol. 51 No. 12

Leading Articles in This Issue

All Aboard for French Lick.........1022
Labor and Fuel Cost—Its Relation to the Paving Brick Market 1025
Notes on Oxidation—and Its Control 1028
Iowans Advertise 1031
Market Conditions for Paving Brick in the Middle West.........1033
Fire Insurance at Actual Cost by Means of Inter-Insurance..........1035
It's a Long Brick Road that Has No Turning 1037
Brick, the Building Material of the Ages 1039
Rate Fundamentals and Tariff Interpretations 1043

☙ ☙ ☙

The Editor's Corner.........1020

☙ ☙ ☙

Special Departments

Machinery and Equipment.........1066
Pottery Notes 1062
The Superintendent 1045
Wake of the News.........1048

American Clay Machinery Co.........1069, 1071

Baird M. & Mfg. Co.......1051
Baldwin Locomotive Wks 1080
Ball Engine Co.........1059
Barber-Greene Co.........1013
Barrett Company.........1073
Beighlee Electric Co.........1059
Bell Locomotive Works...1056
Black Diamond.........1068
Blairsville Machine Co....1049
Bonnott Co.........1002
Boss Co., J. C.........1049
Brewer & Co., H.........1089
Bristol Co.........1050
Broderick & Bascom.......1047
Brown Instrument Co.......1016
Buckeye Traction Ditcher Co.........1065

Canton Grate Co.........1058
Celite Products Co.........1049
Chambers Bros. Co.........1005
Chase Fdry. & Mfg. Co...1078
Clarage Fan Co.........1046
Classified Ads.......1090, 1092
Cleveland Alloys Co.......1075
Cork Insert Co.........1067
Crescent Belt Fastener....1047
Cyclone Grate Bar Co....1055

Didier-March Co...Front Cover
Drymore System.........1054
Duplex Truck Co.........1055
Du Pont Powder Co.........1064

Englehard, Chas.........1082
Erie Steam Shovel Co....1059
Exner, J. E.........1057

Fate Co., The J. D.......1093
Freese & Co., E. M.......1087

Gandy Belting Co.........1063
Garnet Co.........1075
General Electric Co.........1016
General Store.........1075
Goodrich Co., B. F.........1046
Goodyear Tire & Rubber Co.........1009

Hardinge Bros., Inc.........1047
Harris Bros. Co.........1092
Hendrick Mfg. Co.........1078
Hettrick Mfg. Co.........1050
Hill Clutch Co.........1047
Homestead Valve Mfg....1075

International Clay Mchy. 1007

Jackson & Church Co....1066

K-B Pulverizer Co...Back Cover
Keystone Driller Co.........1057
Kisel Motor Car Co.........1060

Lakewood Engr. Co.........1083
Lincoln Electric Co.........1015
Link-Belt Company.........1016

Main Belting Co.........1003
Manufacturers Equipment 1004
Marion Machine Fdry. & Supply Co.........1048
Marion Steam Shovel.......1053
Marsh & Co.........1091
Martinique Hotel.........1049
Morgan Co., F. W.........1046
Morse Chain Co.........1085

Ohio Filler & Shield Co...1054
Ohio Galv. & Mfg. Co...1079
Orenstein-Arthur Koppel. 1079
Osgood Company.........1078
Owens Continuous Tunnel Kiln Co.........1075

Philadelphia Textile Machinery Co.........1006
Potts & Co., C. & A.......1008
Price Electric Co.........1048

Roessler & Hasslacher....1056
Rollin Chemical Co.........1058

Sanderson-Cyclone Drill...1048
Sauerman Bros.........1046
Sawyer Belting Co.........1082
Scandinavia Belting Co...1046
Schofield-Burkett 1080
Smith Co., Claude.........1001
Standard Dry Kiln Co....1052
Steele & Sons, J. C.........1088
Stevenson Company.........1012

Taylor Instrument Co.......1051
Thew Auto-Shovel Co.......1083
Thwing Instrument.........1052
Trade Names.........1074
Trautwein Dryer & Engineering Co.........1001

Union Chain & Mfg. Co...1053
United Wrecking Co.......1092

Victor Balata & Textile Belting Co.........1078

Wallace Mfg. Co.........1086
Watt Mining Car Wheel...1081
Webner, Frank E.........1075
Webster & Kincaid.........1014
Weller Mfg. Co.........1000
Wellington Machine Co. 1010-1011
Westinghouse Electric & Mfg. Co.........1081
Williams & Co., C. K....1046
Wood & Co., R. D.........1061

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard:. "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

The Survival of the Fittest

THESE ARE DAYS when a business must be strong to survive the storm of readjustment which is coming as a result of the United States' participation in the world war. Captains of industry are commenting, with much surprise, upon the unexpected strength of American business which is weathering the storm admirably.

Not all businesses, however, are giving a good account of themselves. Where inefficient methods and equipment have been in vogue, manufacturing and merchandising organizations are not standing the strain and are compelled to give up in the face of increasing fuel, labor and raw material difficulties.

There is no need for any business giving up at this time except the lack of progressive methods.

Report comes that brickmaking yards along the Hackensack River are closing for the winter. Some say they will not attempt to work again until the war is over and the labor question is definitely settled. Under present circumstances it is said to be quite impossible to obtain sufficient returns from the sale of brick to pay expenses and leave a profit. Most Hackensack brickmaking establisments, as well as those along the Hudson River in New York, are an open yard proposition, depending upon good weather for efficient drying. Antiquated machinery and excessive labor consumption are also characteristic of these yards, and burning equipment as well as methods are a grief to the industrial engineer.

If the clayworking industry is to amount to anything during the war and after, it must adopt efficient methods and equipment. If brick is worth manufacturing it is worth getting a price for, and if the correct price is obtained, there should be no question as to the possibility of making its manufacture efficient.

* * *

Wanted—A National Drain Tile Association

A NUMBER OF ATTEMPTS have been made in the past to form a national organization of drain tile manufacturers. During the last clay show in Chicago, we believe, such an attempt was made, but without lasting results.

Iowa drain tile manufacturers are well organized, while Indiana and Illinois are doing some good work. Ohio has a drain tile association, but a national bond or a national unity is needed, particularly at this time when fuel and transportation problems are paramount. A strong national organization of drain tile manufacturers could afford to have adequate representation at Washington, so that hasty action in denying coal or cars would not be taken by those in power without the facts as they exist in the industry today being presented in detail. As a matter of self preservation, drain tile manufacturers all over the country should get together and without delay form a national association.

In this connection we want to call attention to the effective work being done by a local organization, the Western Tile Drainage Association, of Iowa, in focusing the public attention on the importance of drain tile as a war product. On page 1031 will be found a reproduction of a full page advertisement carried by this organization in an Iowa paper, and one which will undoubtedly establish the conviction that drain tile is an essential product in the minds of those who read it.

* * *

No Hasty Action Contemplated

NOW, that the smoke has cleared away following the explosion of Priority Order No. 2, and that the subsequent reverberations in the form of rumors concerning essentials and non-essentials have almost died out, it is possible to get a better understanding as to just what the situation is in Washington.

It appears that no hasty action is contemplated by the United States government or its "volunteer" cooperating war organizations with respect to non-essential commodities. In this connection, it has been decided to keep secret for the time being, if not permanently, the list of four hundred and fifty suggested commodities that some persons in the national organization thought might be dispensed with for the period of the war. It was the knowledge that such a list had been made up that was responsible for the spirit of uneasiness and resentment in business circles recently and that deluged Washington with a flood of telegrams of inquiry and protest.

In the excitement of the moment when it become known that a list of non-essentials had been made up, it was not realized by most business men that this list was merely the suggestion of a body without governmental authority, namely, the Railroad's War Board—the special committee on national defense of the American Railway Association. This list, so far as we know, has not received any attention from the president, nor is it probable that it will, at least, for the present. The list of commodities which the railroads considered as non-essential and therefore to be deprived of car supply, was made up on the request of Judge Robert S. Lovett, government director of priority, and temporary chairman of the War Industries Board of the Council of National Defense, which request was seconded by Dr. Garfield, United States fuel administrator. In another part of this issue a statement from Mr. Lovett as to his intentions with regard to the list submitted by the Railroad's War Board, appears.

A great deal of unnecessary apprehension and harmful rumor has resulted from this matter, which of course is to be regretted. In the light of information which has come after mature consideration of the subject of essentials and non-essentials, let us personally put a stop to further gossip by refusing to pass along any immature and ill-considered statements with regard to just what will be done in the matter of non-essentials at this time.

* * *

A Good Time to Electrify

IT HAS BEEN SAID in these columns that the existing coal shortage is, in a measure, a blessing in disguise. By this it is meant that some of us thru force of circumstances are compelled to adopt measures of efficiency which might otherwise not have been started. This is a good time to look into burning methods and kiln design, but in so doing it should not be forgotten that the boiler room on the average plant offers a good field for fuel economy.

The season of the year is approaching when, because of less activity in building circles and handicaps to capacity operations due to low temperatures, greater opportunity is offered for rehabilitation of equipment. Why not electrify the plant this year, eliminating the weekly blowing out of boilers; the tedious cooling, cleaning and scraping jobs; the disagreeable task of blowing soot out of the tubes and shut-downs occasioned by frozen cylinders. With the passing of the steam boiler, the old steel stack, which required a coat of paint every twelve months, will also go.

Electric motors are compact, and can be installed with great economy of floor space; also the overhead rigging, consisting of pulleys, shafts and belts, can be dispensed with.

Electrification will make possible a reduction in the amount of coal required for clayworking plants—no insignificant item at this time.

* * *

Labor Needs a Little Competition

A LABOR ORGAN, in a recent issue, carries a long editorial written for the avowed purpose of puncturing what it sees as sort of a labor shortage bubble. It uses figures in an attempt to prove that only three per cent. of New York State's workmen are at present engaged in actually carrying on the war, and that therefore there is no such shortage of labor as is commonly reputed.

These statements of course come from a source that is obviously prejudiced, and do not necessarily represent a true state of affairs. However, there is little doubt that labor has taken advantage of the general impression that there is a shortage and has assumed a very independent attitude.

A demonstration of the effect that a little competition may have on labor that is confidently resting upon the security of its position is seen in a report which comes from a Pennsylvania fire brick plant, the management of which inserted an advertisement in a local paper, calling for female help. The result of that ad was that the company received fifteen applications in person from women who were ready to start to work right away at positions in the plant, taking the places of men. The men, seeing that the company was in earnest, immediately got down to business, reducing lay-offs to a minimum, and making it possible for the plant to operate to nearly one hundred per cent. capacity.

It has been said that competition is the life of trade. This has an element of truth in it. However closely different units in an industry may co-operate, there is always room for a competition of service. And so it is with the labor market. In it there are great possibilities for a little healthy competition—both from the employer's view point and that of the employe, for a slothful man is his own worst enemy.

* * *

Another Labor Problem For Official Attention

WHILE THE DRAFTING of unmanageable striking labor, working on government jobs, is being discussed, it might be well to consider another phase of this problem which is closer to home with some clay products manufacturers. It is the matter of governmental departments competing not only with various outside industries, but also among themselves, for the available supply of labor in the neighborhood of army cantonments, arsenals, shipyards, and other military institutions. This competition has been known to take the form of desperate bidding, with the result that wages for common labor in some places has exceeded all reasonable bounds. Obviously, the abnormal wages being established will bankrupt some employers unless they put the prices of their products on an equally abnormal scale of ascent.

It is evident that a remedy must be found. It is our understanding that one is now being discussed in government circles. It is conscription. We believe that a reasonable wage for common labor should be set, and if sufficient men cannot be obtained for government work in the usual way, those having the conduct of the war in hand should be given power to compel them to be placed on the government's payroll. The fixing of a wage would greatly relieve the situation for clay products manufacturers who are "up against" the condition above mentioned and would save the people's money.

ALL ABOARD *fo*

Nation's Face Brick Manufacturers and Dealers Are Planning Their Respective Associations to BeHeld at Southern Indiana's

SOME ORGANIZATIONS meet only when business is good and the individual members feel encouraged about the outlook. The demand for face brick is not exactly overwhelming the manufacturers of that commodity, but the American Face Brick Association will meet, with enthusiasm, just the same; and then it is not presumed that the present situation will continue indefinitely.

Business men recently have examined the experiences of Canada and Great Britain to find some indication of what may be expected in the way of developments affecting industry in this country, now that we are in the world war. With a view toward throwing some light on this subject, Gilbert Seldes, writing from London, tells a very interesting story in a recent issue of the Chicago "Tribune." That part of his article which is particularly interesting to face brick manufacturers and dealers is as follows:

GREAT BURST OF CONSTRUCTION AFTER WAR

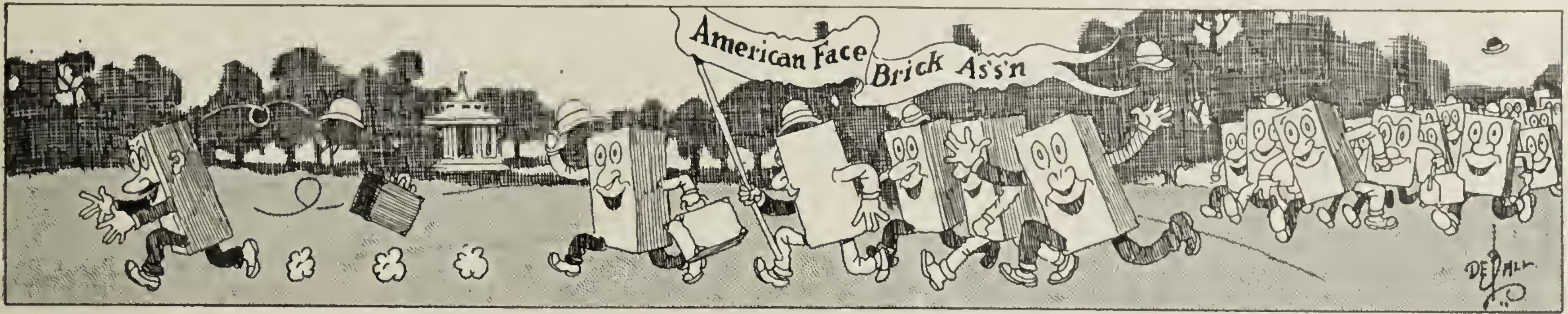
"The building industry is the only productive industry that is hard hit, owing to the shortage of material and labor. There has been no building in England since the war began without the approval of the ministry of munitions. The result is that only munition factories, munition towns, storage plants and government buildings are being built. Civil building has been suspended, as well as new private houses. Much product of the brickyards, lumber, and other materials are used in the munition buildings, but many branch brickyards are idle, the owners concentrating on one yard to reduce expense and making enough to pay overhead charges on the whole property.

"The builders are buying up brickyards, lumber, and all building materials for a tremendous burst of construction after the war. Between a half million and a million dwellings will be needed after the war. Owners of real estate are not anxious to sell owing to the daily increase in value of buildings and ground for the same reason. Homes are being sold in the country, but not in cities, where the owners hold for an increased value. Industrially there is no danger, owing to the fact that war destroys more than peace ever consumed and the total product of industry is utilizable in war."

STILL A DEMAND FOR FACE BRICK

There is still a good demand for face brick in the United States in spite of adverse conditions. A parallel situation is not looked for here with regard to official suppression or discouragement of necessary building. A large number of structures are being erected now and will continue to be built while the war lasts, which require face building brick.

The demand, however, is far from being normal, and so manufacturers and dealers are looking for what the end of the war will bring. That peace will usher in an unprecedented activity in building is the conviction of leading thinkers the country over, and so in order to make the best of the good things that are coming, it behooves the face brick manufacturer and dealer not only to be prepared to supply the demand that will be made for their commodity, but also to be in a position to get the industry's share of business that will develop. In other words, face brick men should take steps to insure their getting some of that ninety per cent. of the dwelling house business which now goes to



FRENCH LICK

to Be Present in Large Numbers at the Annual Meeting of Famous Health Resort on December 12, 13 and 14

frame. Logically, it follows that considerable attention should be given at this time to the American Face Brick Association's promotion plan, outlined in some detail in the September 25 issue of *Brick and Clay Record,* and further comment upon which was given in the October 23 issue.

The program of the meeting is to be characterized by discussions of timely topics, and the sessions which are to take place on the afternoon of the twelfth and the mornings of the thirteenth and fourteenth, will be cut as short as possible. In addition to promotion, the excess profits tax law, adoption of standards and other interesting subjects will be given attention. On the afternoon of December 13 it is planned to have round table conferences of manufacturers from the various producing districts. This was a very successful venture last year.

The Face Brick Dealers' Association of America, as has already been announced, has decided to hold its annual meeting on the same dates as the manufacturers' association.

The French Lick Springs Hotel has provided a special rate to all who attend the meeting of $6 per day for one, and $10 for two occupying one room. Since the French Lick Springs Hotel is operated on the American plan, this means a decided saving with good food and comfortable accommodations.

* * *

American Ceramic Society Divisional Program Gains Headway; Two Branches Formed

TWO LOCAL BRANCHES of the American Ceramic Society have already been formed and others are in process of organization as a result of an appeal sent out by the American Ceramic Society for the propagation of its work thru the medium of sectional divisions.

Numerous advantages are expected to follow in the wake of the development of the movement. From the local organizations formed, the parent society expects to draw a large amount of its literature and to augment the interest shown in the work being done, thereby increasing the results obtained. Thru the local branches, the society will be enabled to get in closer touch with its individual members and to bring the benefits of its work to those who otherwise would not be reached. In this way it is confidently expected that the membership of the parent organization will be greatly enhanced and the society considerably strengthened.

Membership in these local sections is comparatively easy to obtain. Anyone interested in ceramic subjects may gain admission by becoming a member of the parent organization, or, under certain conditions, become a local member, even tho membership in the parent society is not obtained.

Now that the ball has been started rolling and some of the local branches suggested have been organized, it is expected that the remaining sections will fall in line and complete the organization of branches in their territories without delay. Following is a list of the sectional divisions proposed: altho territorial lines have been prescribed and organizing leaders appointed, the committee in charge did not intend to lay down strict boundary lines; the object was to merely indicate the section which might conveniently be included by the different branch organizations:

St. Louis section: Dwight T. Farnham, organizing leader.

Territory: Missouri, Kansas, Nebraska, Oklahoma, and Western Kentucky.

Chicago section: Ellis D. Gates, organizing leader. Territory: Illinois, Indiana, and Wisconsin.

Central Ohio section: Forrest K. Pence, organizing leader. Territory: Columbus, Zanesville, Cambridge, Hocking Valley district, and Eastern Kentucky.

Northern Ohio section: E. P. Poste, organizing leader. Territory: Cleveland, Akron, Toledo, Youngstown, Barberton, Sebring, Bedford, Detroit, Mich.

West Virginia section: C. E. Jackson, organizing leader. Territory: Wheeling, Newell, East Liverpool, etc.

Beaver section: F. W. Walker, Jr., organizing leader. This section is already formed but it is suggested that it be enlarged to include Pittsburgh, and other Western Pennsylvania cities.

New England section: A. Albert Klein, organizing leader. Territory: All New England states and Albany, N. Y.

New York State section: J. B. Shaw, organizing leader. Territory: Alfred, Syracuse, Buffalo, Rochester, Corning, Schenectady, etc.

New Jersey section: Roy H. Minton, organizing leader. Territory: Eastern Pennsylvania, New Jersey and New York City.

Pacific Coast section: Samuel Geijsbeck, organizing leader.

NEW YORK STATE FIRST TO ORGANIZE

Growing out of the New York State Ceramic Products Manufacturers' Association, the New York State Branch of the American Ceramic Society earns the honor of being the first local section to organize since the membership committee of the national organization started the ball a-rolling to increase the membership and scope of work to be covered by this society. The New York section was organized at the meetings held at Hornell, N. Y., on November 19 and 20, in the assembly room of the local library. This meeting was a decided success, there being about twenty-seven present who were connected with the ceramic industries.

A charter was drawn up which will be sent to the national organization to be acted upon at its annual meeting, which is to be held in Indianapolis next February. The following officers of the New York State branch were elected contingent upon the granting of the charter: L. E. Barringer, engineer of insulations, General Electric Co., Schenectady, president; Frederic R. Carder, manager of the Stuben Glass Works, Corning, vice-president; and J. B. Shaw, Alfred University, Alfred, as secretary-treasurer.

Among the business transacted was the appointment of a committee to draw up the by-laws for the organization. It was suggested that four meetings a year be held, the time and place at which they are to be held to be left to the executive committee.

A program was held Tuesday morning at which papers of a caliber that the national organization might well be proud, were read. The first paper was by Emerson P. Poste, of the Elyria (Ohio) Enameled Products Co., and had for its theme the "Effect of Time of Smelting on the Nature of the Enamel." This paper was followed by a very lively and interesting discussion which served to bring up some new thoughts to the author on which to work before the paper is completed and read before the convention to be held at Indianapolis.

"Casting Heavy Clay Products" was the title of the paper presented by F. H. Riddle, of the U. S. Bureau of Standards, Pittsburgh. This paper, which we hope to publish at a later date, gave some very interesting facts concerning the manufacture of clay glass pots in which optical glass is now being prepared.

A talk on "Refractories," by Raymond M. Howe, fellow, Mellon Institute, for U. S. Refractories Manufacturers' Association, Pittsburgh, was listened to very attentively by those present. New methods of conducting various tests on refractory brick were described in detail by the speaker.

The program wound up by the reading of a paper on chemical porcelain. This paper was prepared by Charles F. Binns, director of the New York State School of Ceramics, Alfred, and divulged some startling facts about the chemical porcelain that is now manufactured in this country.

CHICAGO SECTION COMES OUT STRONG

Prominent ceramists, a large number of whom were from out of town points, answered the call sent out by W. D. Gates to members of the American Ceramic Society who resided in the district to be included in the proposed Chicago section. The meeting for organization was held in the offices of the American Terra Cotta and Ceramic Co. in the Peoples Gas Building, Chicago, on Saturday afternoon, December 1. The fact that such a large number of prominent members of the society turned out to this meeting, which offered no other attraction than its organization, shows that this section has in it some real, live, interested members imbued with a spirit that will make this section one of the most prominent and strongest of its kind.

A resolution was read and signed by those present applying for a charter to become a local branch of the American Ceramic Society. Following this, temporary officers were chosen as follows: W. D. Gates, president of the American Terra Cotta and Ceramic Co., Chicago, chairman, and F. L. Steinhoff, associate editor, *Brick and Clay Record*, Chicago, secretary-treasurer.

It was suggested that four meetings be held each year and that new papers be presented and papers which have appeared in the transactions be more fully discussed at the meetings. A temporary assessment of $2 a year was decided upon and later when the membership grows it is expected to be able to lower this assessment.

It is proposed to hold the next meeting in Chicago on Saturday, December 29, to be started with a luncheon at 1:00 o'clock and followed by a short business meeting, after which some interesting papers will be read. A large attendence is expected at this meeting and everyone interested in ceramics, regardless of whether or not he is a member of the American Ceramic Society, is invited to attend.

* * *

Cleveland Plans to Protect Paving

The first real move toward protecting its pavements has been taken by the city of Cleveland, Ohio, or will be, if the recommendations of Director of Public Service Bernstein are accepted by the city council. It is Mr. Bernstein's plan to have a bureau that will be known as the division of underground improvements, and whose duties will be to see that all underground work is done before the new pavements are laid, thus reducing to a minimum the chances of destroying new pavement in order to install sewers, telephone wires, and any other public work. In addition, this bureau would keep an accurate record of all new pavements during the time they are guaranteed by the contractors. The entire cost of this bureau would not be more than $4,000 a year according to Mr. Bernstein, and the saving to the city would be considerably more.

LABOR *and* FUEL COST—*Its* RELATION *to the* PAVING BRICK MARKET

What Inducements Have the Clay Products Manufacturers Offered to Keep Their Labor from Drifting to More Remunerative Occupations—and Has Any Attempt Been Made to Defray the Increased Cost of Coal by Larger and More Profitable Sales, Effected Thru Publicity?

By Marion W. Blair

Superintendent, Thornton (W. Va.) Fire Brick Company. This Paper was Read at the Convention of the National Paving Brick Manufacturers' Association, Cleveland, November 19 and 20.

IF YOU WILL PARDON a wartime simile, just imagine yourself in command of a cruiser trying to enter an enemy harbor which you know to be thoroly mined. You are, however, in possession of a blueprint showing all mine locations. You happen to know also that it is one of a thousand such prints, all made from different tracings. You have already passed a great number of wrecks and the lookout has announced a sub to port, to starboard, and dead ahead. When you strike the water you wake up and find that you are in overalls instead of a uniform, that the cruiser was a paving block plant, and instead of being hit by a sub and having to swim ashore you are recovering from the confusion in your business caused by the labor, fuel, and market conditions of the past year.

If the business is to continue we must have a more accurate chart and avoid the mines and torpedoes of the future, and if we are to do that, we must look critically at the past and if possible analyze some of the causes of our present state. To say "war" and let it go at that is not the answer. The war has not upset all business to the extent that it has the manufacture of clay products.

It is questionable if the acute labor situation in the clay industry is not in a measure the result of past bad management. For years the punishment administered for a breach of discipline has been a layoff or a hasty discharge, without much consideration of a man's opportunities or necessities. The foreman or superintendent has been a rank autocrat and patience with regard to human limitations has never been considered much of an asset.

On the other hand, labor has been allowed to know but one remedy for a fault condemned. That has been to quit the job. It has only been since the demand for labor has exceeded the supply that we have discovered that it does not require much brain or energy to fire a man. Neither does it to quit. The result of our past attitude of indifference as to whether a man stayed or not has developed a sense of loyalty to one thing only and that is the pay envelope.

Today to lay a man off or to let him quit is to drive him out of the community and set him drifting toward the larger centers of population. Henry Ford's thirty thousand had never heard of an automobile twenty years ago and it has been the blind development of a spirit of indifference and discontent that has driven to Detroit one or two men from my neighborhood and a half dozen from yours.

HOW OTHER INDUSTRIES HOLD EMPLOYES

In a certain part of Pennsylvania is a coal and coke concern which has not suffered from a labor shortage. For more than four months during 1907 and 1908 not a wheel turned on that company's property. Not a person went hungry and not a man moved his family from a company house. When the whistle blew to resume there was a full crew on the job. There has been a full crew on that job ever since. An incident related to me by the general manager of the company may serve to illustrate a policy which may in part answer why.

One of their mines was put in charge of a new superintendent and a little later was visited by the manager. At the pit mouth about noon he met two miners on their way out. As they were greeted and passed on the superintendent said, "I'm going to fire those two men. They only load six cars apiece and go home and I need their working place for somebody that will load more coal." The manager replied something like this: "My friend, when you took this job there was one important detail which you evidently failed to grasp. That is that you can't fire anyone. Those two men have worked for this company for twenty odd years. They both own their homes. Each has an independent income sufficient to keep him and his family. They are loading coal because we need the coal—not because they need the money, and *they can't be fired.*" The superintendent's loyalty could not stand such a strain. He quit.

How many men are there employed in the brick business who can't be fired? In fact, has it not been one of our pet theories that there is not a man in an organization that it could not get along just as well without? At the present time most of us are getting along without. Do we like it? Is not the fact that we never have had men who can't be fired one of the reasons that the coal mines, the steel mills, and the munitions plants and the glass houses have our men on their payrolls and are making us pay their higher wages in the increased price of coal and iron?

CLAY PLANT'S INDUCEMENTS TO LABOR ARE FEW

Many things about the average brick plant contribute toward the difficulty of holding the labor in any but worse than normal times. Other factors than a supply of labor influence most the location of a plant. Shale deposits are not necessarily located in proximity to the electric lights and picture shows and the drift of population is never toward the outlying community. Not realizing the length of time we are to be subject to present conditions or worse, and hoping that a few months would see it thru, many plants have allowed their men to drift away one at a time, feeling that they were perhaps getting rid of a certain amount of incompetence and discontent. There was a hope of filling the vacancies with better men at the same price. But the drift continues to be toward lighter work, shorter hours, and always higher pay. The place of the inefficient man has to be filled with one less efficient usually, at a higher price, or the work has been left undone.

While mere wage advance would not have prevented the shortage, it would have delayed it. You say "we did advance wages." True, in about the same proportion that you have backed a nation wide publicity campaign for the last ten years. Right here, I take it, is the relation between our present labor and fuel shortage and the market.

It is, after all, a question of price obtained for the product because if the money is spent, the fuel and labor can be had. That is the way the other industries got yours—they bought it.

WHAT HAS INDUSTRY DONE FOR PUBLICITY?

For years, however, the clay industries have been urged to put sufficient money into a publicity campaign and so keep it up as to produce a demand at the right price that the present plants could not possibly supply—a campaign that would convince the public that clay products have no substitute. It would be possible to so fix the idea of a brick road in the mind of the public that when you said "road" the man you were talking to would automatically think "Brick." Likewise when you said "house," he would think "Brick." Just as a few years ago ninety-nine out of one hundred persons thought "Pears" when you said "soap" and today think "Ivory" instead.

The right kind of demand gets the right kind of price and the right price in past years would have accumulated a surplus to tide over such emergencies as the present. Other industries are running at a profit now simply because the buying public is paying all the expense and a profit as well.

A few concerns have contributed to such funds, but owing to the attitude of the industry as a whole, the amount has come out of individual profits, at a sacrifice, and not out of a general increase in price.

Less than two years ago paving block were put on Ohio roads at practically cost. Why? To introduce a new commodity? That is sometimes a fair excuse for such a course. No, that was not the reason. Was it because the Ohio roads were so nearly all paved that the paving block plants intended to go out of business? No; there are enough unpaved streets and roads in Ohio alone to keep all its plants busy for one hundred years to come. Why, then? It is supposed that, owing to the immense stock on hand, owing to a winter's manufacture and light shipments, it was necessary to move the block at a sacrifice in order to secure working capital so that the plants could continue to lose money.

In other words, the industry was in such bad repute or so little known to the banks that it was good business to sell block which normally sold for fourteen dollars at eleven, a cut of three dollars, rather than borrow money at six per cent. and carry an absolutely indestructible material in stock, which the three dollars would have done for a period of nearly five years. Such a business could scarcely be expected to meet a wage increase, but it is likely to meet a sheriff most any time. Cut-throat competition, lack of organization and wasteful practices can have no other termination.

DIRECTOR MANNING WAS RIGHT

The Director of the Bureau of Mines was recently severely criticized for forcibly calling attention to the lack of correct engineering and technical information in the clay industry. Professor Staley of Iowa State College defended the clayworker on the ground that the heretofore cheap fuel did not justify a large investment in order to save it. I fell for the Professor's argument at first but, after all, it is the percentage that tells the story and not the cost in dollars and cents. It is a demonstrated fact that fifty to sixty per cent. of the fuel used in burning the rough clay wares is an absolute waste. The fact has been known for years, as has the remedy. Why has not the remedy been applied? Same old why—lack of funds to put in the fuel saving equipment.

Fifty cents per thousand added to the price of paving block during the past ten years would have built a continuous kiln or equipped with producer gas every plant in the country and would have, in addition, provided for a little experiment as well. An industry which has shown the ability to take care of itself, which was free from waste and was furnishing the public with an article vital to an auxiliary transportation system usable in peace or war, equally valuable to the cities' food supply and the nation's defense, would have little to fear from a fuel shortage under government control. The only reason we are not on the preferred list is because of failure in the past to support a publicity campaign to mold public and official opinion to recognize the real merit and money value of a brick house and a brick paved road.

The keynote of this paper, then, is education and a price with a real profit for your material, real economy and technic in the manufacture of your product. There is at this time but one other course: That is to go out of business acknowledging a superior in the man who has built and is operating a munition plant, a glass house, or a steel mill in your town, with your labor, and is making you pay the cost.

⁂

Big Expansion to Follow Onondaga Merger

Organization of a $500,000 corporation to manufacture brick and hollow tile was completed here this week with the formation of the Onondaga (N. Y.) Brick and Tile Corporation. The concern will be the largest of its kind in the state and one of the largest in the United States.

The deal includes the merger of the Onondaga Vitrified Brick Co. with new interests. The present plant of the Onondaga Vitrified Brick Co. at Warner, N. Y., will be expanded from three to five hundred per cent., the number of employes increased proportionately, and the output boosted in a similar degree.

J. Brewster Gere, president of the Onondaga Vitrified Brick Co., will become vice-president of the new concern with Robert Love, of Syracuse, president. Mr. Gere, who has been active head of the Onondaga Vitrified Brick Co., and to whose efforts the present success of the plant is due in a large measure, will continue to devote a large portion of his time to the enterprise, retaining, with his present associates in the old company, a controlling interest in the new corporation.

Other officers of the new company are:

Arthur N. Ellis, of the City Bank of Syracuse, will be treasurer of the new corporation, and C. B. Cory, secretary and sales manager. The board of directors consists of Mr. Love, Levi S. Chapman, A. N. Ellis, Martin G. Grossman, Irving N. Beeler, and H. J. Churchill, representing the new interests, and J. Brewster Gere, C. B. Corey and Giles H. Stilwell representing the old interests.

Work on the expansion of the plant at Warner will be commenced at once. The new company has already purchased the George W. Marvin farm, which adjoins the plant on the south, thereby acquiring a large shale deposit. This property also contains a good set of buildings, including a large brick house which will be occupied by the manager of the Onondaga Brick & Tile Corporation.

The deal is one of the largest financial transactions that has taken place in this city this year and one of the largest in the clay products industry to be concluded here for a long period of years.

The present year has been one of the most successful in the company's history. The demand for brick has greatly exceeded the output and the only setback has been the irregularity in getting coal. For some time coal has been delivered to the plant in trucks from Syracuse.

* * *

AFTERMATH *of* PAVING BRICK CONVENTION

OWING to the great dispatch which characterized the report of the fourteenth annual meeting of the Nation Paving Brick Manufacturers' Association, held at Cleveland, Ohio, November 19 and 20, appearing in the issue of *Brick and Clay Record* bearing the same date as the closing day of the convention, it was not possible to discuss some important features of the meeting in as much detail as was desired.

One of these is the matter of H. H. Macdonald's resignation as assistant secretary of the association Chas. J. Deckman, who was on the committee appointed to draw up a resolution of appreciation, read the following:

"It is with sincere regret, yet with deep pleasure that we accept the resignation of Mr. H. H. Macdonald as assistant secretary of the N. P. B. M. A.

"With regret, because we lose the service of a valuable, earnest, energetic and painstaking official of our association, who has given us a high standard of efficiency and alertness seldom known in positions requiring like services. His every act has been one of kindness, courtesy and helpful service to the association and to those with whom he has come in daily contact in the performance of his duty.

"With pleasure, because his new relation will afford him opportunity for the expansion of his unbounded energy, and we hope form a fertile field for his resourceful endeavors.

"Therefore, be it resolved, That we express to him our regret and pleasure herein enunciated, and commend him to his new position with our warmest expression of confidence and the best wishes of all the membership of the association."

H. H. MacDonald, Who Bids Farewell to the Clayworking Industry.

Another matter was the election of officers for the ensuing year. In this connection, C. C. Blair was re-elected president; J. L. Murphy, elected vice-president; Will P. Blair, re-elected secretary, and C. C. Barr, treasurer.

J. W. Robb, who has served as vice-president, declined re-election to that office and J. L. Murphy was elected instead. The following twenty-five directors were also elected:

C. C. Barr, Streator, Ill.; C. C. Blair, Canton, Ohio; H. C. Moatz, Cleveland, Ohio; W. P. Blair, Cleveland, Ohio; J. G. Barbour, Canton, Ohio; J. B. Wilcox, Alliance, Ohio; Eb. Rodgers, Alton, Ill.; J. L. Murphy, Nelsonville, Ohio; H. S. Renkert, Canton, Ohio; G. O. French, Canton, Ohio; W. N. Alderman, Athens, Ohio; S. M. Duty, Cleveland, Ohio; F. L. Manning, Portsmouth, Ohio; R. C. Burton, Zanesville, Ohio; G. H. Francis, Greensburgh, Pa.; D. R. Porter, Clarksburg, W. Va.; H. C. Adams, Danville, Ill.; John Kline, Wickliffe, Ohio; J. R. Zmunt, Cleveland, Ohio; C. P. Mayer, Bridgeville, Pa.; T. J. Armstrong, Springfield, Ill.; J. L. Highley, Cleveland, Ohio; G. E. Carlyle, Portsmouth, Ohio; F. W. Lucke, Chicago, Ill., and F. Vernon Aler, Martinsburg, W. Va.

* * *

Wants Information Regarding Peacock Colors

A ceramic engineer of Texas desires information with regard to obtaining peacock colors in burning brick. He says that he has been told that such colors are secured by using tar in the burning, but he does not know the method and the right material to be used.

If any of our readers can give us any information on this subject we would be glad to have them get in touch with us, writing *Brick and Clay Record* a letter fully explaining the process in which tar is used.

NOTES *on* OXIDATION *and its* CONTROL

Some Interesting Information About This Stage of the Burn Is Contained in the Following Article, as Well as a Description of the System Employed by the Author to Control It

By Samuel C. Karzen

Plant Superintendent, American Sewer Pipe Co.,
Uhrichsville, Ohio.

THE IMPORTANCE OF PROPER CONTROL during the oxidation period in the burning of clay ware cannot be overestimated. There is hardly any doubt but that a considerable percentage of the loss suffered in burning is often due to lack of knowledge on the burner's part, and sometimes, even on the superintendent's part, as to the proper method of procedure at this stage. A practical method of controlling the burn during the oxidation period and one which I have used with good success is that outlined in this article.

The range of temperature during which the oxidation of carbon occurs varies widely with different clays. With most clays, however, the expulsion of the carbon contents commences around 800 deg. Fahr. and continues until completely eliminated, or until the body becomes so dense due to vitrification that the pressure of the confined carbon dioxide becomes great enough to swell the ware, and deform it. There is, however, a definite temperature range within the limits of which the most efficient oxidation occurs for the particular clay in question. This temperature range must be definitely determined for each clay if the burning is to be done most efficiently. When the proper limits of temperature for complete oxidation of the clay is determined, and the temperature held within these limits until the carbon is completely expelled, the burning may be accomplished safely in the shortest possible time.

Different clays contain different amounts of carbon and contain it in a variety of forms. For this reason some clays require an altogether different treatment in the oxidation period than do others. In the manufacture of crude clay products such as paving brick, face brick, sewer pipe, drain tile, etc., or in other words, products made from fire clays, shales, and red burning alluvial clays, a great deal of attention is required in the elimination of the carbon present.

Upon Close Examination, a Black Core Can Be Seen in the Socket Trials Just Drawn by This Burner, Indicating the Presence of Carbon and Showing the Necessity for More Oxidation.

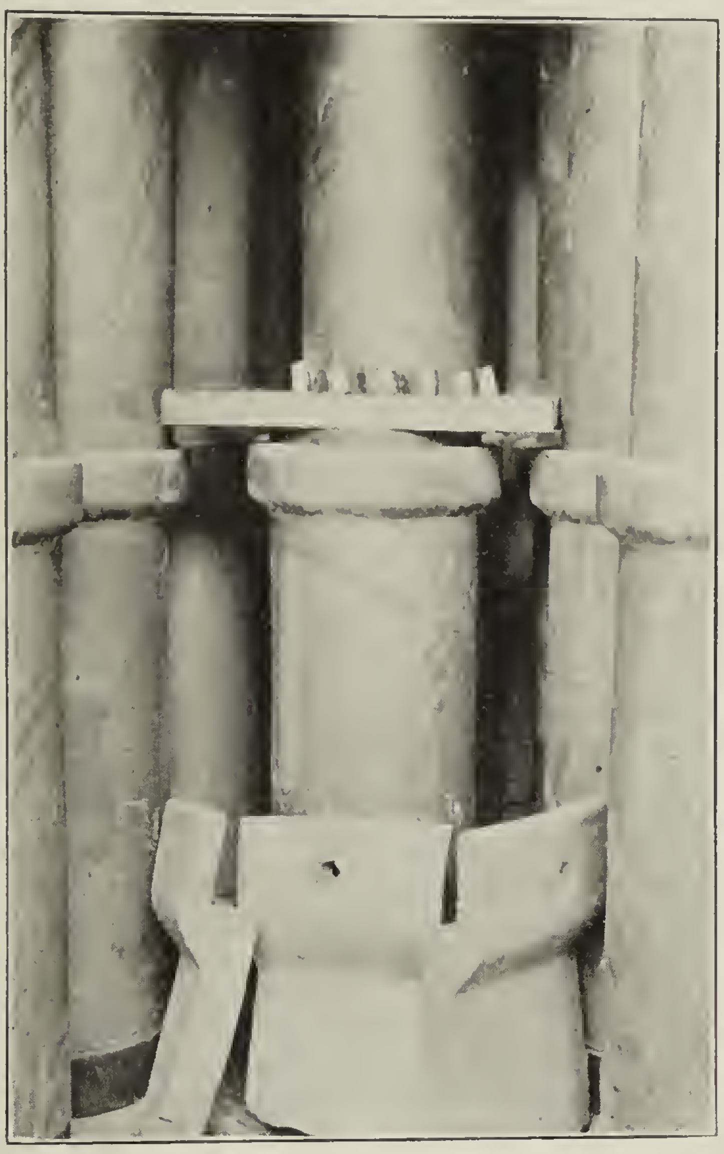
OXIDATION BEHAVIOR OF DIFFERENT CLAYS

Fire clays used in the manufacture of the above products are generally of the No. 2 variety. The per cent. of carbon present in this type of clay is usually quite low and in a form that is easily oxidized. There are relatively few cases where trouble is experienced in swelling due to faulty oxidation of ware fabricated from No. 2 fire clays. The heaviest pipe made of this kind of clay may usually be burned rapidly thru this period with perfect safety. I have often broken samples of large ware, and found heavy black cores, denoting improper oxidation, yet the ware itself was unharmed. Very often these centers show up bright red instead of black. This is due to the fact that the carbon present has absorbed oxygen from the iron oxide present in the clay when it was unable to obtain a further supply of oxygen from the kiln atmosphere because of the extreme density of the ware. The iron later becomes reoxidized but retains the peculiar red coloration. In the case of sewer pipe, the quality of the ware is not affected by this type of core.

Paving brick, however, must be thoroly oxidized, since coring cannot be permitted. The core weakens the brick and cuases them to be punky; and this type of brick generally shows a high rattler loss. It is therefore necessary for the manufacturer of fire clay pavers to have his ware thoroly oxidized before his burn is pushed to completion.

Shales contain a large quantity of carbon in a condition that is usually oxidized with very great difficulty. Swelling is a common defect in shale districts and a careful system of burning must be used to control this period so as to prevent an excess in loss of ware.

Alluvial clays also require careful control during the oxidation period or swelling will result. Drain tile manufacturers often meet with this trouble in the burning of their ware.



Showing the Position of the Burning Trials in a Sewer Pipe Kiln, Just Before the Wicket is Built Up. Those on the Slab Are Vitrification or Fusion Trials, While Those on the Floor Are Socket or Core Trials to Show the Extent of Oxidation.

In order to properly determine the most satisfactory temperature and temperature range for oxidation, trials must be used. The sewer pipe manufacturers use the so-called socket trial. These are sections of the socket cut from the largest of the sewer pipe that are set in the kiln to be burned. If a kiln were set with 24-inch standard pipe as the ware of largest diameter then socket trials would have to be cut from this size of pipe and from the pipe made of the same batch of clay as those pipe which are being set. The reason for this is, that the larger and heavier the ware is, the longer it takes for the carbon to oxidize and if the larger pipe are thoroly oxidized the smaller pipe are sure to be.

The trials should be set directly on the floor of the kiln and quite close to the door. Holes are cut in the trials so as to permit them to be drawn out with a rod at ease. The kiln door should be constructed to permit quick removal of the brick near the ground that the rod may be admitted. This may be done by building a wicket within a wicket; that is, a smaller door is built right in the wicket in such a manner that it can easily and quickly be opened and the trial pieces removed, and then be re-constructed.

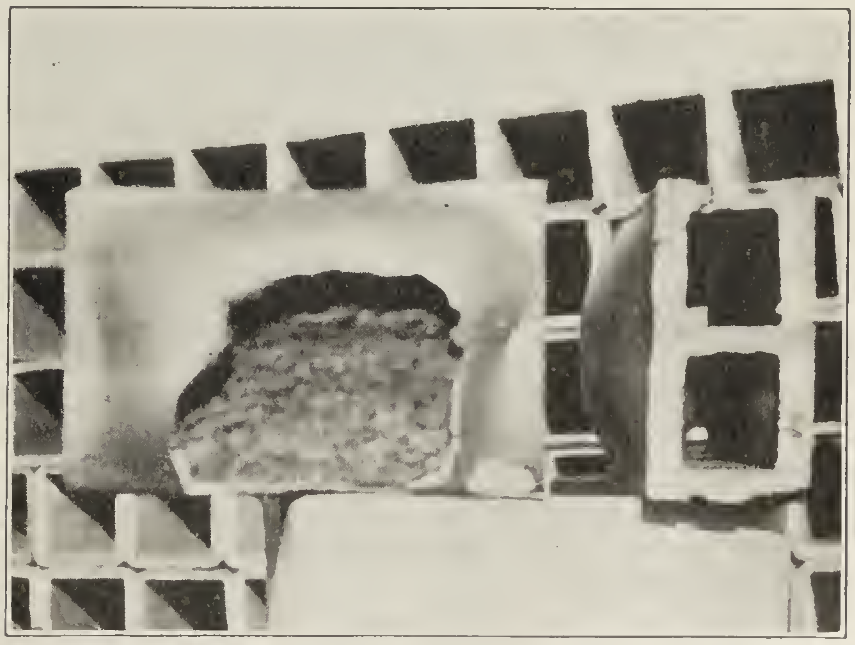
PROCEDURE DURING OXIDATION PERIOD

As a rule, oxidation does not proceed very rapidly until after a dark red heat is obtained. I know of but one case and that in a fire clay district, where the most rapid period of oxidation occurred at a very faint heat. Usually oxidation proceeds most rapidly when a good red heat is reached. Where the pyrometer is not in use it is necessary to gage your temperature and conditions by the color of the ware. As soon as a dark red heat is obtained, the first trial is drawn and broken so that its interior may be examined. After the first trial has been drawn the kiln temperature is held almost constant, and at the end of six hours another trial is drawn and examined. If the black core is not becoming any smaller it will probably be necessary to increase the temperature somewhat.

If, however, the carbon core is becoming smaller with great rapidity, the temperature can be either held or increased very slowly and trials drawn regularly every six hours until the core has disappeared entirely. When the trial shows that the core has disappeared completely it is then well, as a factor of safety, to allow from six to twelve hours to elapse before the heat is increased. If this is not done, swelling may often occur, since oxygen has an easier access to the small trials than to the larger pipe and while the carbon may be driven out in the trial pieces it may not as yet be driven out of the large pipe. After allowing for this extra time for oxidation the heat may be raised without any danger to the ware. As I have already stated, this procedure is only necessary in shale districts, since fire clay manufacturers are seldom troubled with this defect.

In the paving brick industry the trials used are generally the brick themselves and these are placed pretty well toward the center of the kiln. Openings are left both in the setting and in the kiln door so as to permit access to the brick with a rod. Trials are drawn in approximately the same fashion as outlined above.

With the aid of a pyrometer the oxidation range is easily determined and controlled. When red heat is reached a trial is drawn and the temperature is noted on the pyrometer. The kiln temperature may then be increased and trials drawn constantly, using the pyrometer as a guide. The point at which oxidation proceeds most rapidly is the one that should be maintained. My personal experience has been that oxidation proceeds more rapidly if the temperature increases continuously during the period but at a slow rate. I have found that by covering about 100 deg. Fahr. during the period of oxidation at the rate of five or ten degrees per hour gives very good results. The point I wish to make, however, is that the trials should govern the oxidation period regardless of whether you have a pyrometer or not. Also, as a factor of safety, never forget to allow a fair amount of time to elapse after the trial pieces show that oxidation is complete.



This is What Happens if the Heat is Raised so Rapidly That the Outside of the Ware Vitrifies Before All of the Carbon is Oxidized. The Pressure of the Confined Gases Bloats and Swells the Ware.

Using Waste Heat from Burning Kilns to Dry Clay Ware

Considerable interest is being displayed by clay products manufacturers in the subject of using heat from burning kilns for drying purposes, which has been discussed in several recent issues of *Brick and Clay Record*. It will be recalled that the experiences of two companies were treated at length and the layouts of the flue system in use at the plants pictured. The material so far published has been all of an affirmative nature, testifying to the practicability of the plan. However, we are now in receipt of a letter from N. Hermes, superintendent of the Muskogee (Okla.) Vitrified Brick Co., denying the adaptability of this system to all plant conditions. Mr. Hermes writes:

"I have noticed in the last few issues of *Brick and Clay Record* articles dealing with the subject of drawing heat from burning kilns for drying clay ware. Our kilns are already equipped with the tunnels to the waste heat dryer as well as the stack, and we have tried drawing the heat from the burning kilns and sending it directly to the dryer. In our case it works all right if we do not have more than two kilns on the fan at one time. In case we have more than two kilns on the fan, it does not draw heavy enough from each individual kiln to obtain the proper draft unless we speed it up faster than our dryer conditions will permit. As we nearly always have two cooling kilns on the fan, the system does not work out well in our case, and consequently we have abandoned it."

Of course the application of this system must be worked out individually for each plant, to suit the conditions found on that plant. If sufficient heat may be obtained for drying purposes by utilizing the waste heat from cooling kilns, the only advantages to be derived by attaching the burning kilns to the fan would be in procuring a stronger and more uniform draft than that supplied by a stack.

Where too much heat or too much air is forced into the dryer by speeding up the fan, it may be necessary and advisable to relieve the pressure by an open valve between the fan and the dryer, allowing the excess heat and air to escape into the open air. However, the difficulty in regulating the draft under such conditions is very great.

The great advantage of using the heat from the burning kilns for drying purposes is that it obviates the use of auxiliary furnaces when the heat procured from cooling kilns is not sufficient to dry the ware. This also results in a considerable saving of fuel and, as explained by Mr. Smith, of the Ohio State Brick & Stone Co., who described the system as used on that company's plant in the October 25 issue, it very frequently shortens the time of burning. This is done by giving a stronger and more uniform draft to the kilns.

We have another interesting letter on this subject, which, after procuring additional information, we will publish in the next issue, and with it we would like to include the opinions of other clay plant owners and superintendents who have had some experience in using hot kiln gases for drying. If you have tried this system on your plant and have found it to be successful, send us a rough sketch of the layout and submit some detailed information. And, more important, if you have tested the plan and found it to be unsatisfactory on your plant, give your fellow manufacturers the benefit of your experience by describing in detail those elements which combined to make it a failure.

FREIGHT RATE WAR TAX *in* EFFECT

THE THREE PER CENT. TAX upon transportation charges authorized by the War Revenue Act approved by President Wilson on October 3 went into effect November 1. The levy will be made by the railroads for remission to the United States Government under section 500 of the Act which provides "that from and after the first day of November, 1917, there shall be levied, assessed, collected, and paid a tax equivalent to three per centum of the amount paid for the transportation by rail or water or by any form of mechanical motor power when in competition with carriers by rail or water of property by freight consigned from one point in the United States to another."

Interpretation of the act has already been the subject of conference between the accounting officers of the carriers and representatives of the Internal Revenue Commissioner. As the result of these conferences, a distinction is made between prepaid and collect shipments starting from their initial point of origin prior to, but not delivered until or subsequent to November 1, 1917. The construction placed upon the application of the act is as follows:

SHIPMENTS AFFECTED BY TAX

The tax will apply upon all collect shipments reaching destination on or after November 1, regardless of the fact that such shipments may have been in transit before midnight, October 31.

The tax will not apply upon (a) shipments upon which the entire transit service was performed prior to November 1, regardless of the time when charges are actually paid; (b) prepaid consignments received for which bill of lading was issued prior to midnight, October 31, and (c) freight charges uncollected as of midnight, October 31, on freights received collect, provided the freight therefor was received before midnight, October 31st.

The tax will not apply upon switching services performed prior to midnight, October 31, altho payment therefor may not be made until after November 1. Conversely, the tax will apply upon switching services paid for prior to November 1 where the service was not actually performed until or after November 1. Where switching, drayage, wharfage, storage, lighterage, compression-in-transit, milling-in-transit, reconsignment charges, or refrigeration services are included in the thru rate for the road-haul movement, no additional tax will accrue for such services. Neither will the tax apply to charges made for car service, demurrage, consigning freight "to order notify," storage, car rental, and weighing. Industrial switching, not included in road-haul rates, is subject to the tax.

As will be seen from the section of the act quoted in the first paragraph, the tax does not apply upon shipments destined to Canadian, Mexican, or ex-ocean points. "If, however," say the railroads in qualification of this provision, "a shipment intended for export be consigned to a port agent and it move to the port on a port lading, the transportation costs on it will be subject to the tax."

The railroad agents have been ordered to assess the tax upon prepaid shipments at point of origin and to make collections upon collect traffic at destination. In case a shipment is reconsigned with "charges to follow," the levy will

(*Continued on Page* 1064.)

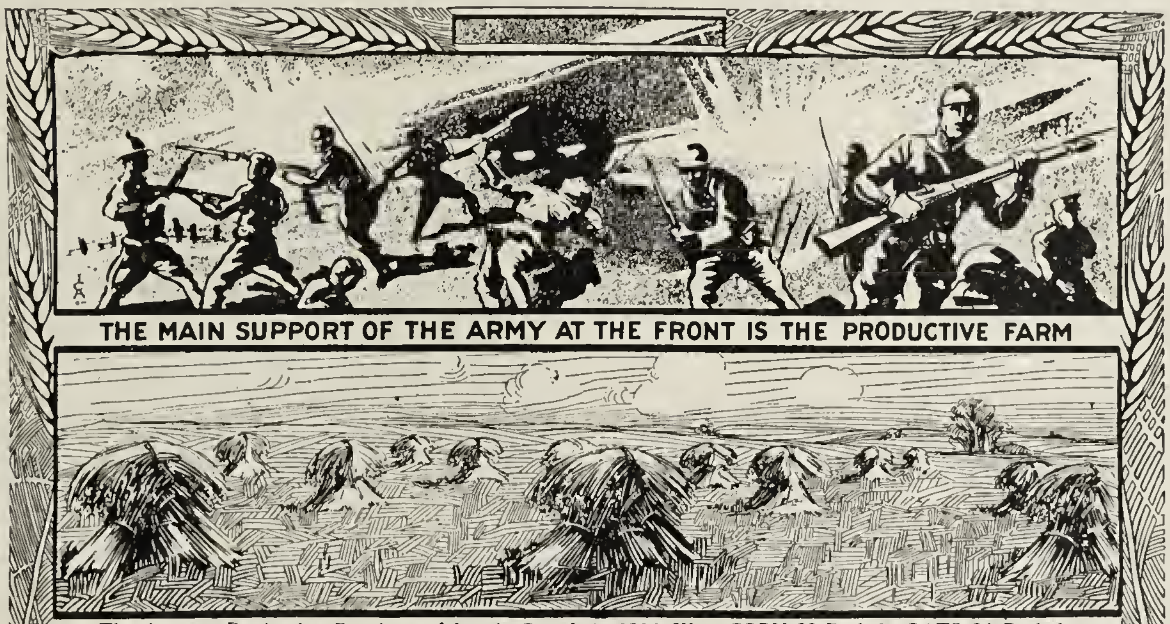
IOWANS ADVERTISE

Clay Products Manufacturers of the Hawkeye State Use Page Space to Prove Drain Tile Industry Essential

THE Western Tile Drainage Bureau is certainly "on its toes."

Realizing the need for prompt action at this time in the matter of essentials and non-essentials among the nation's industries, which is being discussed by Washington, it has launched a campaign of publicity to prove that drain tile factories, at least, are an economic-military necessity. The full-page advertisement illustrated herewith appeared in the November 21 issue of the Des Moines "Register," which has a large circulation among influential people as well as among Iowa farmers. C. B. Platt, secretary of the Permanent Buildings Society, of which the Western Drainage Bureau is a part, advises that his organization is considering an extended advertising campaign, using two prominent western farm papers.

While R. S. Lovett, administrator of the Priorities Transportation Act, has issued a statement to the effect that he does not at this time contemplate any further action with respect to transportation of non-essentials, there is always danger of immature action being taken at Washington by some who may not be fully informed with regard to the situation. In other words, it behooves the clay products manufacture whose product is essential in the present crisis, to make this fact known to the public. The Western Tile Drainage Bureau has chosen very effective means to this end.


OPEN SOIL-TILE DRAINED-PLANT FOOD STORAGE
SATURATED SUB SOIL

THE MAIN SUPPORT OF THE ARMY AT THE FRONT IS THE PRODUCTIVE FARM

The Average Production Per Acre of Iowa's Cereals in 1914, Was—CORN 30 Bushels, OATS 34 Bushels

When Fields Are Thoroughly Tiled, They Produce 60 to 80 Bushels of Corn—50 to 75 Bushels of Oats

Drain Tile Factories Are An Economic-Military Necessity

Their Product Serves to Greatly Increase the Food Supply. Tile Trenches Keep War Trenches Efficient

The comparisons below refer to the following Iowa counties as Group No. 1—Buena Vista, Calhoun, Palo Alto, Humboldt, Greene, Kossuth, Pocahontas, Webster, Wright and Story. Group No. 2—Franklin, Boone, Clay, Tama, Carroll, Emmett, Grundy, Hamilton, Sac Hardin.

Comparing 1905 to 1914—Figures from Census and Weather Reports:—

1905 was generally more favorable in temperature and rainfall. In 1905 there were 218,656 more acres planted to corn than in 1914, and yet the production of corn was 117,111,612 bushels greater in 1914. This is accounted for principally in counties extensively tile drained. In Group No. 1 there were 166,989 more acres available for corn in 1914 than in 1905, and this group produced 15,617,000 more bushels in 1914 than in 1905. Group No. 2 (small reclaimed swamp areas, yet extensively tiled) had 20,000 less acres in corn in 1914 than in 1915, yet produced 5,700,000 more bushels. Of the total corn production in 1914 26.2% was produced in Groups 1 and 2, of the intensively tiled counties—20 in number.

It is thus conclusively proved that **Tile Drainage will increase the yield of an undrained field from 20% to 100%**, according to yield capacity before drainage is installed. Rolling land, usually counted as "naturally drained," will produce 20% greater crops if tile drained—with less seed and practically the same labor—because tile drainage provides a Plant Food Storehouse from which the plants draw during wet or dry seasons.

Tile Ditchers: Register your names and addresses with us.

Farmers: Write us for further Information.

Western Tile Drainage Bureau

218 Clapp Block, Des Moines, Ia.

Reproduction of the Full-Page Advertisement Carried by the Western Tile Drainage Bureau in the Des Moines "Register."

Far-sighted individuals in the clay products manufacturing industry have hammered on the need for a liberal publicity policy in order that the industry might continue its growth and receive the consideration due it at the hands of the public. All too little attention has been paid to the words of the advertising advocates in the past to the sorrow of all concerned.

A shining example of what is possible in the way of consideration as an industry is found in the present status of the automobile business. Surely it would seem, if the matter of essentials and non-essentials is to be determined, that the manufacturer of pleasure cars would have very little chance of being classed as essential business. Yet the automobile manufacturers thru their liberal publicity policy and because of progressive business methods have established themselves in a strong position with the government and with the public, so that it is not going to be easy for any one to say that motor car manufacturers be deprived of coal, other raw materials and of all empty cars for shipping. Of course, the automobile manufacturer is showing a spirit of co-operation which is highly commendable. He is adequately represented at Washington and is in a position to get full consideration and is prepared to adjust his business to any demand that may be necessary.

The clay products manufacturers must do this in order to survive. The industry that is not at the job in these troublesome times, is sure to fall by the way.

Let us have more of the kind of advertising paid for by the Western Tile Drainage Bureau.

* * *

Production of Ganister in the United States in 1916.

A branch of the mineral industry that has been brought into prominence by the unusual activity of the furnaces in the United States is the quarrying of ganister rock, according to G. F. Loughlin, of the U. S. Geological Survey, Department of the Interior. The output of this material in 1916 was 859,956 short tons, valued at $529,805—about 62 cents a ton. This was an increase of 50 per cent. in quantity, 58 per cent. in value, and 3 cents in average price compared with 1915.

Ganister is a quartzite, a sandstone in which silica has filled the spaces between the original quartz grains and cemented the rock into a compact mass. Ganister rock is broken to the size of ordinary crushed stone, then ground finely and mixed with sufficient lime to form a bond, and thus made into silica brick. This brick is used to line the sides and crowns of open-hearth steel furnaces, by-product coke ovens, continuous glass furnaces, and any furnaces that require a highly refractory brick and in which the brick do not come into contact with material that would flux them.

Ganister rock was quarried in Alabama, Colorado, Illinois, Maryland, Ohio, Pennsylvania, South Dakota, and Wisconsin in 1916.

Pennsylvania and Wisconsin are the chief producing states. Pennsylvania's output was 675,424 short tons (79 per cent. of the total), valued at $410,541, and Wisconsin's was 137.577 short tons, valued at $79,643. Blair and Huntington counties furnished most of the stone quarried in Pennsylvania, and quarries near Devils Lake, Sauk County, furnished most of that quarried in Wisconsin. Many manufacturers of silica brick or refractory products quarry their own stone.

* * *

Non-Essential Industry Safe for Present

Further government action to restrict transportation of non-essentials is not at this time contemplated by Judge Robert S. Lovett, administrator of the Priorities Transportation Act.

Mr. Lovett issued this statement:

"While the situation may change, yet I am not at this time contemplating any further action with respect to transportation of non-essentials. Conditions, however, will be constantly observed.

"As to the War Industries Board, apart from my action under the priority act with respect to transportation, I feel safe in saying that the board will take no action designed to eliminate any non-essential industry without reasonable notice and an opportunity to be heard."

* * *

Wisconsin Clay Manufacturers' Convention

The eighteenth annual meeting of the Wisconsin Clay Manufacturers' Association will be held in Milwaukee on January 31 and February 1, 1918. Headquarters will be maintained at the Republican House, and a full attendance of Wisconsin brick and tile manufacturers is urged, as very important subjects of special interest at this time will be brought to the attention of the convention. Badger clayworkers, please reserve the dates—January 31 and February 1.

* * *

St. Elmo (Ill.) Plant Active

The past year has been a most successful one for the McEwing & Thomas Clay Products Co.'s plant at St. Elmo, Ill., which is being operated under the management of E. M. Durland.

"We have had a very busy season and are still working to full capacity to get our orders out before cold weather," writes Mr. Durland, "and get the jobs that are started finished up, altho we are hoping to run right thru the winter if the government does not shut off our fuel supply.

"More Business Than Usual" for the McEwing and Thomas Clay Products Co.'s Plant at St. Elmoe, Ill., Operated by E. M. Durland. Particular Attention is Called to the Car of Black Diamonds in the Foreground.

"We have furnished some large face brick jobs this season in Wisconsin, Minnesota, and Iowa, as well as some in northern Illinois, and trust, in the coming season, to do a greater business in that territory.

"I have been a reader of your paper for about eight years, or ever since I went into the brick business and have found it a very great help in many ways. May you continue to grow and prosper."

* * *

Northwestern Clay Association to Meet at Minneapolis, January 17 and 18

At a meeting of the executive committee of the Northwestern Clay Association, held recently, it was decided to hold the 1918 convention in Minneapolis at the West Hotel on January 17 and 18.

On account of the unusual business conditions existing at the present time, and especially those in the clayworking field, the officers of the association are extremely anxious to have a good attendance, and with this thought in mind, are endeavoring to arrange an especially interesting program.

Further announcement with regard to the subjects to be discussed, and possibly a list of the speakers will be published at a later date, when these are available.

MARKET CONDITIONS *for* PAVING BRICK *in the* MIDDLE WEST

The Middle West's Great Need for Hard Surfaced Roads in Stimulating Its War Industries and Its Agricultural Production Is a Convincing Argument to Show That Paving Brick Is an Essential Product

By G. W. Thurston

Secretary of the Western Paving Brick Manufacturers' Association.

This Paper was Read at the Convention of the National Paving Brick Manufacturers' Association, Cleveland, November 19 and 20.

IN ATTEMPTING TO REVIEW the conditions of the manufacturer before this well informed assembly, I trust for the moment you will forget my introduction to you as the secretary of the Western Paving Brick Manufacturers' Association, and regard me as a citizen who is actively engaged in the manufacture of a commodity whose use is of grave necessity to the needs of the present day; as one producing vitrified paving brick which enables large volumes of traffic to speedily wend its way thru the channels of business and makes it possible to better allow the rural districts to rush their crops of grain and food to a more anxious market. To come before you, from the Middle West, and attempt to describe "Market Conditions" to you of the East only causes me to again desire audience with you, who have possibly been more closely confronted with the conditions of labor, transportation, fuel, and production.

Briefly outlining our territory, I might say our western association trade demand is divided into two divisions:

First: The demand for vitrified brick in the cities is classified as our municipal business, and constitutes our old market. In this division would come the pavement of city streets and corporation properties, which has been steadily on the increase and which, at this writing, is greater than ever before.

Today we are building pavements of the heaviest class with the most rigid specifications ever known in our section of the country. In Kansas City, Mo., the specifications for brick pavements read about as follows: 8-inch concrete base, 1-inch sand-cement dry mortar cushion, 4-inch vitrified vertical fiber paving brick, the brick being approximately 4x4x8½, weighing approximately 12 pounds, and meeting a rattler test of 22 per cent., the class of filler used being cement-grout or asphalt.

In smaller cities and towns these specifications are reduced proportionately to cope with the particular conditions to be met. By the use of an asphalt filler, this construction has met our extreme change in temperature to a degree far greater than any other type of brick construction we have as yet adopted.

By actual records and investigations the amount of wear has been less, the surface has remained smoother and is found more even after a period of years than our other types of construction. We have obtained very satisfactory results in appearance, durability, smoothness, and cleanliness. In the coming of the rubber tired traffic we have reason to believe that this specification in any of its modified forms will more readily gain popularity and more satisfactorily meet the demands put upon a pavement. The demand for this type of work has been very heavy.

RURAL HIGHWAYS PROMISE GREAT MARKET

Second: Our next division covers the rural highway project, which constitutes our "new" market and which points to the dawn of a period of road construction never before equaled. Our western association faces the heaviest market conditions in its history. Since our government appropriated some fifty million dollars for highway construction, many states in the Mid-Continent trade belt have hastily made provision by the enactment of laws in hearty accord with the Federal statute for hard surfacing of roads, which encourage the building of many miles of permanent highways.

For instance, prior to January, 1916, we had an average of less than 3 per cent. of our roads paved while some states, such as California, Indiana, Ohio, and others not in our territory, had an average of 25 to 30 per cent. of their total roads paved. Since the first of the year 1917, the number of miles of prospective hard surface roads has increased about 3,000 miles. We have reason to believe that the brick industry will have a goodly portion of this work. To give you a definite instance, one state in our territory has pititions in circulation now for 500 miles of brick roads—and a petition in that state means the assurance of a road. To be sure, these roads will not all be built in one year; the program generally is to extend over a period of five years.

In view of this increasing demand, the need becomes urgent for a more efficient highway system, especially now when the railroad is unable to cope with the tremendous volume of traffic; when our coal, ore, and food-stuffs are in greater demand; and when we as manufacturers are forced to operate under most severe conditions with regard to labor and transportation. To rehearse the difficulties which we, as western manufacturers, are struggling with would, no doubt, merely recall to your minds similar circumstances in your trade territory of the East. Fuel troubles, labor difficulties, and a shortage of cars for transportation places our industry —and many miles of much needed highways, both rural and city—far below its needed efficient standing.

SECTION SUFFERING FROM LACK OF HIGHWAYS

The Middle West produces large quantities of food, our chief occupation being that of agriculture—raising live stock and growing wheat, corn, potatoes, and all grain and food articles in large quantities. Mineral products are also produced, all of which are now in great demand, being needed in the prosecution of the war. It is from those sections of the country working under great pressure, and from those people who actually till the soil, that the demand arises for "365-day" hard surfaced highways; they see the need and know the means whereby they can actually produce and supply this most urgent demand for food and materials.

Our middle western country also is a producer of oil, in fact the Mid-Continent oil fields have attracted the capitalists from all parts of the United States. The almost untraveled country highways in this section, in a day, have changed from earth roads of dust and mud to arteries of the heaviest class of traffic known, carrying operators' supplies, drawn by team and motor—a traffic which demands prompt attention, and upon which hinges the activities of plants busily engaged day and night actually producing crude and refined oils. These people are at a daily loss of thousands of dollars for the lack of hard surfaced highways. To pave such a district, would not, and could not be classed a luxury; in fact, it would be the reverse. The production of fuel and lubricating oils is much needed in this age of wars and battle.

This same condition exists in our coal fields, which are among the largest in the United States. Here, as in the case of the oil industry, we could obviate to a great extent the delays incurred in the transportation of fuel by the completion of hard surfaced highways.

"MUSHROOM" TOWNS IN NEED OF ROADS

Minerals, principally lead and zinc, are found in large quantities in our trade belt. I refer you to the Joplin and Miami districts, where highways are needed equally as bad as paved streets in our important cities. The highways in these districts carry a continuous line of traffic, riding in ruts and holes in roads of earth, causing much loss of money in delays and upkeep of equipment. Newly and rapidly built cities, towns which have grown from a population of nothing to 6,000 and 10,000 population in the brief period of ten or twelve months, must have pavements if that section is to produce these needed raw materials for the government.

The general demand in our trade belt is essentially one of necessity—the completion of a system of highways to take care of the heavy production of mineral, oil, and agricultural products, all gravely needed by the government. Such a country of raw material production requires hard surfaced highways. The railroads are unable to cope with the situation, the motor truck "does its bit" and would do more were it not for the lack of a completed system of transcontinental highways. The Middle West needs the completion of such a system.

Such circumstances behoove us to give hearty accord to immediate and urgent efforts to make better marketing conditions which will ultimately result in the most efficient system of food production and distribution ever known.

◆ ◆ ◆

MISSION *of* CONTRACTORS *and* BUILDERS SHOW

IF REPORTS can be relied on, a stupendous volume of building is being figured on paper, and it requires only a change in the mental attitude of the principals back of the projects to start an era of active building operations.

Back of the forthcoming Contractors' and Builders' Show at Chicago, February 6 to 13, is a well-organized plan to demonstrate to bankers, investors, property owners, contractors and builders that the time to build is *now*, because, tho costs are apparently high, the returns from such investments are correspondingly large, and that the purchasing power of the dollar in building materials is relatively greater than in almost any other class of commodity. Exhibitors will doubtless find it easy to prove, for instance, that, tho it may cost twenty per cent. more to build now than it would have cost in normal times, rental values have meanwhile advanced all the way from thirty to fifty per cent.

Similarly, in factory construction, the earning power of a manufacturing plant is so far above normal that the relatively small increase in building cost is no excuse for delaying the time of building.

Another argument in favor of prompt action in building that will be demonstrated by the exhibitors is that the vast demand for building materials for housing workmen in industrial communities doing government work will inevitably lead to higher prices if not actually shut off the general supply altogether in important lines.

The Contractors' and Builders' Show will take the place and date of the annual cement show. While the cement interests will be generously represented, they will form only one feature of the big show, as lumber, brick, tile, steel, glass, paint, heating, ventilating, roofing and a score of other interests will be represented in the exhibits.

A large number of allied conventions will be held in Chicago the week of the show. Plans are also being formulated for organizing a great National Congress of all building interests to hold a one day's session that week for the purpose of arousing interest and stimulating confidence in building operation.

EXCHANGE OF IDEAS VITALLY NECESSARY JUST NOW

Another important function to be performed by this show will be the opportunity offered by men in all allied building lines to get together personally for the exchange of ideas. Conditions have passed thru such startling changes for you and all, that old conditions are now almost valueless and new methods and measures will have to be adopted.

In the building industries the slogan "Business as Usual" is a complete misfit, for business is most unusual—unusually good in certain industrial centers and unusually bad in centers not blessed with war contracts. Yet, the fever heat of extraordinary activity may visit the center where chill now prevails and exchange of ideas will help contractors, builders and supply houses to meet these conditions when they arise, just as England and France came forward to advise America how to solve war problems.

Such an exchange of ideas will also instill spirit and backbone into the low-spirited and discouraged and will, it is certain, exert a quickening influence on the whole industry.

FIRE INSURANCE *at* ACTUAL COST *by* MEANS *of* INTER-INSURANCE

A Suggestion to Clay Products Manufacturers, Looking Toward the Formation of a New Inter-Insurance Bureau

By H. R. Corbett

WHAT IS INTER-INSURANCE? It is an agreement by which a body of men in the same calling agree to insure each other, employing an attorney to attend to the details and rebating to each other at stated periods all the money saved by this direct, sensible, economical form of mutual co-operation.

The subscribers, or policyholders, do not form a "Company." They do not buy insurance. They are not in the insurance business. They merely exchange fire indemnity by private contract—each with the rest.

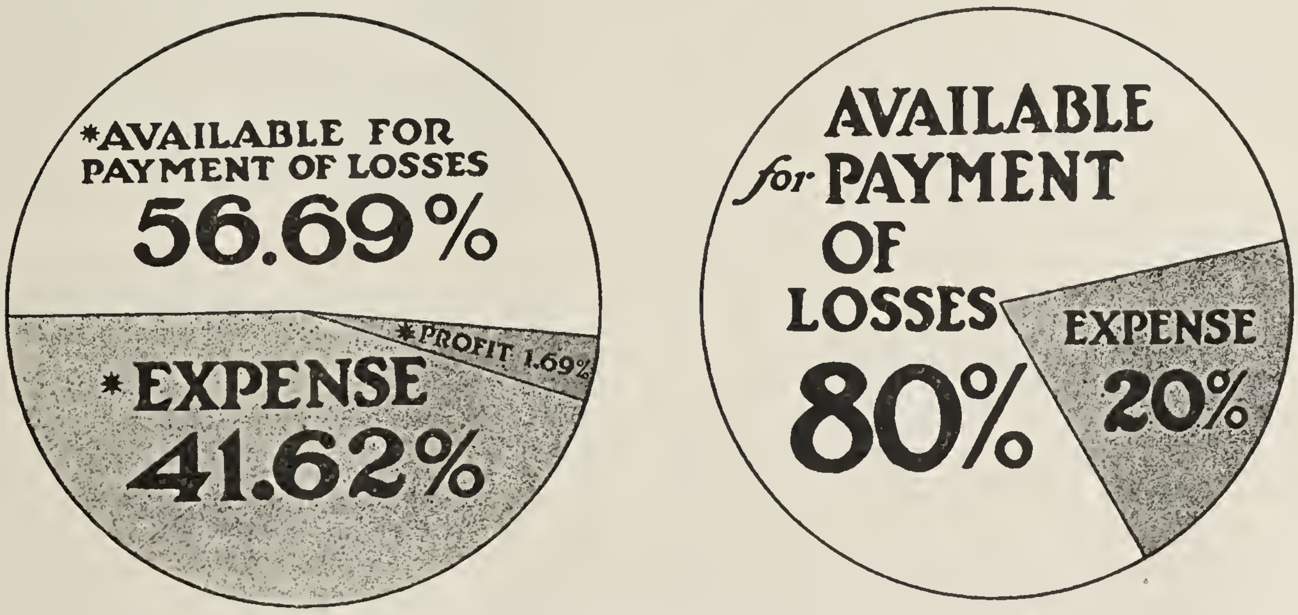
Neither does their "attorney" sell insurance. His function is that of an employe, engaged to handle the details of the inter-related transactions.

ILLUSTRATION:

This is what one representative inter-insurance bureau has accomplished for its policyholders. During the past eight years the subscribers at this bureau have received back nearly $1,000,000 in fire losses. Every loss has been settled promptly and to the entire satisfaction of the policyholder. The subscribers have also had returned to them about $600,000 in actual cash savings, compared with what they would have paid the stock companies.

In addition to saving this $600,000 to its policyholders, the active co-operation of those at the bureau resulted in reducing the stock company rates an average of twenty per cent. compared with rates in force before this new form of protection was available; and the $600,000 saving was made below even this reduced rate. Compared with previously existing rates, the subscribers therefore saved not less than one million dollars.

The average reduction of twenty per cent. in old-line rates on similar establishments also saved the subscribers a large sum of money on the old-line insurance which they carried in excess of the maximum amount which the subscribers at the bureau were permitted to write on their properties.



The Immense Saving Effected by the Inter-Insurance Plan is Strikingly Presented in These Two Diagrams.

The efforts of this bureau also resulted in the correction of many injustices in rates, rulings and exactions which existed before the policyholders adopted this form of self-protection.

WHAT CLAYWORKERS CAN DO

The subscribers at such a bureau organized in the clay products manufacturing industry could afford each other an opportunity to carry their own insurance, thereby eliminating all elements of waste and thus securing for themselves fire insurance at actual cost, after having thoroly satisfied themselves as to the safety and economy of the plan, and the efficiency of the management.

Experience has shown conclusively that this method of inter-insurance as applied to a specific business will secure for its policyholders absolute security and the most economical insurance in existence today. The service rendered includes co-operation of a very practical kind, based upon mutual interest in preventing losses under the management of men who have spent their lives in the practical application of insurance principles to the needs of the individual.

SAFETY

The wealth and financial standing of clay products manufacturers, as a class, make inter-insurance absolutely secure, as the payment of each honest loss is guaranteed by a large number of high-rated business concerns whose combined capital figures more millions of dollars than can be shown by the largest fire insurance company.

Each subscriber agrees, under a legal and enforceable contract, to pay his proportion of the losses as they occur. As a guarantee of good faith, and to facilitate quick settlement of losses, each subscriber deposits with the attorney his proportionate share of a fund known as the guarantee deposit, for the purpose of meeting fire losses and current expenses.

By this plan the policyholders at the bureau have a larger margin of safety than any fire insurance company can afford; and immediate settlements are made in case of loss in a spirit of co-operation and fairness to all.

SAVING

Analysis of fire insurance premiums in all stock fire companies:

Every $100 of fire insurance premiums is applied as follows:

Expense of management and profit of the companies	$43.31
Fire losses	56.69
	$100.00

(Figures from the Insurance Year Book.)

The first item above cannot exceed $20 under inter-insurance, thus saving $23.31 on every $100 of premium on that item alone.

The heavy cost of this item in the stock companies is due chiefly to:

(1) The enormous overhead expenses.

(2) The agents' commissions.

(3) The companies' profits.

But a large part of the $56.69 out of every $100 paid for fire losses can also be saved. Why?

When you buy your fire insurance from stock companies that serve the *entire public* you not only pay your necessary proportion of legitimate fire losses, but also:

(1) The losses resulting from dishonesty, carelessness, spite, etc., spoken of as the moral hazard.

(2) The losses incident to conflagrations, or great fires that destroy large areas in the same town or city.

(3) And most important of all the unfair burden of a rating on well managed clay products plants out of all proportion to the actual risk in those lines. In other words, we are paying not only our losses, but also a part of the losses of others.

As long as you are content to be served by methods burdened with outside hazards, *you must pay your proportion of the public tolls.*

The inter-insurance bureau offers you an opportunity to come in and insure with a preferred class of risks in your own line where the moral and other public hazards are eliminated and where you contract to pay only your proportion of honest fire losses occurring among concerns of your own class and engaged in the same line of business.

SERVICE

Besides effecting a marked saving in fire insurance costs, the inter-insurance bureau renders supplementary service of great value. This service includes:

(1) The frequent inspection of plants by trained experts specializing in our line only who are competent to advise safeguards of inestimable value.

(2) The examination and close study of all the fire insurance policies held by subscribers in stock companies. In an amazingly large percentage of cases, examiners discover that such policies are improperly executed or that they contain restrictions or omissions that render them practically or largely worthless.

IDEAL CONDITIONS UNDER LAW OF AVERAGE

The co-operation of a large number of firms all in the same line of business, and the fact that they continuously insure each other against fire loss over a period of years, creates a "law of average" and ideal insurance conditions. The natural result would be an average annual saving of from thirty per cent. to fifty per cent.

The large number of institutions serves a double purpose. It enables the segregation of the very best risks for this service, and it distributes the fire loss among so large a number of subscribers that the proportionate liability for each is very small.

SUMMING UP

To sum up, inter-insurance has the following advantages: Absolute security; no increased liability; a positive saving; a further probably saving; an unequaled service.

⁂

Admit Morrisey of Cleveland

James Morrisey, better known as "Jim" to his friends in the building and face brick industries, is now a benedict. He was married on November 14, but the facts did not leak out until a few days ago. Mr. Morrisey is manager of the face brick department of the Cleveland (Ohio) Builders Supply Co., and is well known thruout the Middle West. He and the new Mrs. Morrisey are spending the next few weeks in the South, dodging the wintry blasts of Lake Erie. Mrs. Morrisey was Miss Henrietta Du Mont, of Cleveland.

COMING CONVENTIONS

Dec. 12, 13, and 14—American Face Brick Association, at French Lick, Ind. Headquarters, French Lick Springs Hotel.

Dec. 12, 13, and 14—Face Brick Dealers' Association, at French Lick, Ind. Headquarters, French Lick Springs Hotel.

Jan. 17 and 18—Northwestern Clay Association, at Minneapolis, Minn. Headquarters, West Hotel.

Jan. 29 and 30—Sand Lime Brick Manufacturers' Association, at Buffalo, N. Y. Headquarters, Lafayette Hotel.

Jan. 29, 30, and 31—Canadian National Clay Products Association, at Toronto, Ont., Can. Headquarters, Prince George Hotel.

Jan. 31 and Feb. 1—Wisconsin Clay Manufacturers' Association, at Milwaukee, Wis. Headquarters, Republican House.

Feb. 6 to 13—Contractors and Builders' Show, at the Coliseum, Chicago, Ill.

Feb. 10 to 16—National Brick Manufacturers' Association, at Indianapolis, Ind. Headquarters, Claypool Hotel.

Feb. 10 to 16—American Ceramic Society, at Indianapolis, Ind. Headquarters, Claypool Hotel.

IT'S *a* LONG BRICK ROAD *that* HAS NO TURNING

Blank's Short Cut System of Bookkeeping Overlooked One Little Point—the Certified Check

By G. W. Green, M. A. (Oxon)

Secretary, United Fire Brick Company, Uniontown, Pa.

BALDWIN was just passing the Brixton Inn as Blank emerged, hat on the back of his head, an unlighted cigar at an angle of forty-five degrees elevation in one corner of his mouth, and wearing a general air of satisfaction resulting from a full meal. Nothing went to waste when Blank sat down to a repast.

Baldwin was Just Passing the Brixton Inn as Blank Emerged, Hat on the Back of His Head, an Unlighted Cigar at an Angle of Forty-five Degrees Elevation in One Corner of His Mouth, and Wearing a General Air of Satisfaction.

"Oh, by the way, Mr. Blank," said Baldwin as Blank, about to pass on with a curt nod of recognition, paused impatiently. "We received your check for the silica brick shipped recently, but doubtless thru an oversight you omitted to include the previous old balance of twenty-five dollars."

"What of it?" asked Blank, bluntly.

"Nothing, only the check was marked 'In full of account, and since it did not include the old balance we could not accept it in full payment of your account."

"Why don't you send it back then?" growled Blank.

"Why, you see, we decided—" began Baldwin, rather at a loss for a reply.

"You're a fine set of fellows, aren't you?" interrupted Blank. "You claim it's against your principles to add my commission to your selling price for brick, yet you go ahead and deposit a check tendered in full payment of our account and then try to creep out of the settlement. When you cashed that check, you gave us a receipt in full. Now why do you try to back out of it?"

BLANK'S SHORT CUT

"How did you find out we had deposited it?" asked Baldwin, rather surprised, because instead of having it deposited, it had merely been certified and now lay in a drawer in his desk back in the office.

"Had the bank book balanced just yesterday. Their balance agreed with ours. See? That means no checks out. With your check out the bank's balance would have been that much larger. That's our short cut bookkeeping system. No red tape in our methods."

"It isn't a tape measure, it's a balance I'm interested in with regard to your account. Do you really mean to tell me you refuse to pay the remaining twenty-five dollars?" insisted Baldwin.

"I am not making any assertions concerning it at all. I am simply forgetting it, that's all."

"Then I think we might as well be for getting it, too," responded Baldwin, with a trace of a smile.

"Might as well," assented Blank over his shoulder as he passed on, looking more self-satisfied than ever, and entirely unconscious of any ambiguity in Baldwin's remark. Baldwin also went his way with lengthy strides, appearing equally well satisfied with the interview.

A week later as he sat in his office trying to figure out how to make one car of brick fill orders for two cars, in walked Danneman, the local attorney for the collection agency with whom he had placed their account against Blank's company the afternoon of the day they had their encounter on the steps of the Brixton Inn.

"Hello, Danneman," he cheerfully greeted him. "Tell me this. It is said that the greatest benefactor of the race is the man who can make two blades of grass grow where one grew before. What should we say of a man in these times who could make one brick fill an order which required two brick before?"

"Don't worry. The time will come again when you will wish one car of brick didn't go nearly so far in satisfying a customer's needs. Just now I worry because everybody seems to have money enough to pay his bills and I have too few accounts to collect."

Danneman took considerable pride in his ability to secure payment of accounts and to ensnare folks who were trying to evade their honest obligations. It was claimed that all the Latin he remembered from his law course was "Soc et tu em."

"What's been up between old Safety First Blank and you?" he continued, perching on a flat desk and beginning to make sketches on a blotter with a red ink pen dipped in the black ink stand. "He gave me a check for that little account you had against him, but he declares he will get even with you if it takes ten years."

"Guess I'll have to hire a bodyguard. When did all this happen?" inquired Baldwin, with assumed anxiety.

DANNEMAN'S SATISFACTORY REPORT

"This morning. In fact, I have just come from my interview with him. When I first presented the claim, he declared they had a check endorsed by you in full payment of their account, and started to paw thru a bunch of cancelled checks with his stubby fingers. All of a sudden he stopped, slammed the checks back in the drawer, and looked as tho he was going to boil over. So just to keep his spirits up I told him since he disputed the claim I'd just go out and enter suit and let the best man win. Then his temperature rose a few degrees more but all the same he came across with the check. Now what do you suppose he found in that pile of old checks?"

Opening a drawer, Baldwin explained: "Here's the check he was looking for. We just got it certified so it could not cause any annoyance while we presented our claim for the little residue."

"The little overdue, you mean," supplemented Danneman. "You certainly froze onto that much while you were going after the rest. I don't know how you would have fared if he had chosen to put up a fight, but he sure felt he had a knock-out blow. He had that much less both to fight with and to fight for. All the same, I wish you had returned their check and placed the entire account with the collection agency."

"Why?" asked Baldwin, with some surprise.

"So I could get a commission for collecting the whole amount, of course. On account of this fancy move of yours, I get a commission only for collecting twenty-five dollars from a Blank."

"BURNT BY THEIR OWN COALS."

Adding a few more feet to the centipede he was sketching on the blotter, he continued, "You know the Littleton Coal Co.?"

"Don't I! I bought enough coal from that concern to fill my cellar while the price was at the top notch."

"Funny about coal, isn't it?" commented Danneman. "When brick are bought, they go to the buyer. When coal is sold, it goes to the cellar. In this case you feel you were sold by the Littleton people as well as the coal."

"Anyway, I have the coal; at least what has not yet been used, and that is more than some other people can say. I had rather buy coal at five dollars *per ton* than at three dollars *perhaps*. A Ford in hand is worth two in the ditch. But what have you up your sleeve about the Littleton gang?"

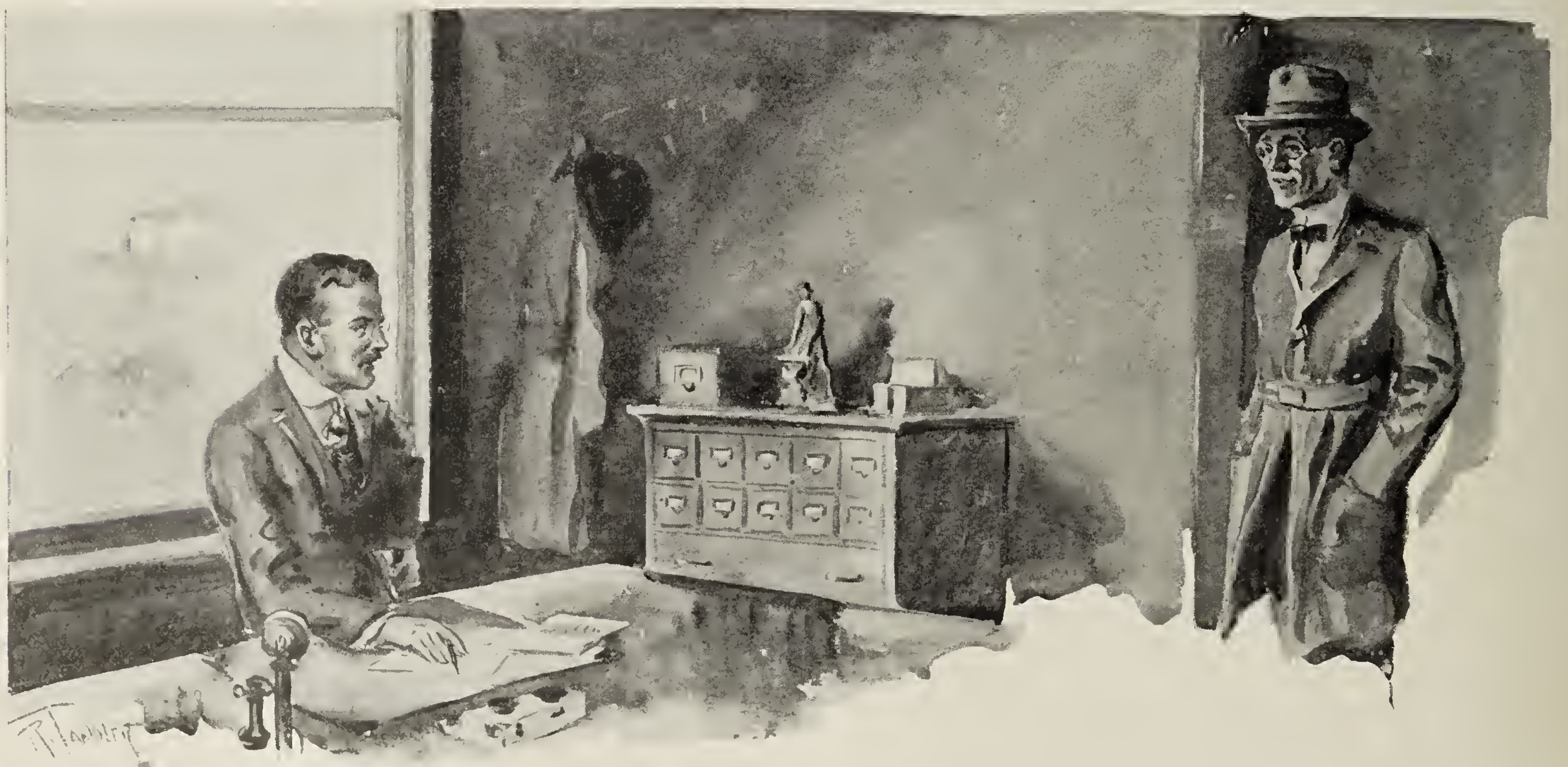
"A few months ago their chief clerk contracted with the Brixton Silica Brick Co. for their year's supply of coal at three dollars a net ton."

"Three dollars a Little-ton, you mean," interposed Baldwin.

"Worse than that. It turned out to be three dollars a nit ton. When the price of coal commenced to climb, they repudiated their contract, claimed that their chief clerk had no authority to bind the company, and stated that a verbal contract was not worth the paper it was written on, anyway. The Brixton people bought on the open market until the price was set at two dollars and then there was no open market. So they put it up to the government, stating it was a case of coal or shut down, and leave their open hearth customers in a hole. The fuel commission made a list of coal companies in the vicinity, and, as luck would have it, they picked out our Littleton friends and directed them to supply Brixton with the coal they require."

"And will they get three dollars a ton for it?" asked Baldwin.

"I guess not," ejaculated Danneman, tossing aside the blotter and sticking the pen in the mucilage bottle. "They will receive the government price of two dollars and no more. They got burnt by their own coals."



"What's Been Up Between Old Safety First Blank and You? He Gave Me a Check for That Little Account You Had Against Him, But He Declares He Will Get Even with You If it Takes Ten Years."

BRICK, *the* BUILDING MATERIAL *of the* AGES

From the Earliest Ages of Man to the Present Day, Brick Has Been Supreme—Its History Is the History of Architecture

By A. F. Rosenheim

Fellow of the American Institute of Architects, and Former
President of the Southern California Chapter, Before
Which Organization This Paper Was Read.

QUOTING from Sir Charles Lyell's "Antiquity of Man," —"Granite disintegrates and crumbles into particles of mica, quartz, and feldspar; marble soon moulders into dust of carbonate of lime, but hard, well-burnt clay endures forever in the ancient landmarks of mankind."

The complete story of brick has never been told. Its history is the history of architecture. The purpose of this paper is to bring home briefly to you the fact that brick, the building material which has come down thru the centuries, is still the leading building material in America. Other materials have, in various countries and at various periods, crept in for a time, but brick has always serenely gone on its way and after each digression has come back with more prestige than ever before.

It is a noteworthy fact that every nation that has not stone easily available for its building construction has developed some kind of durable brick, specimens of which are extant today. It would be interesting to know whether or not the ancient nations, which so far as we are aware had no intercourse each independently developed its building brick.

Brick was known in the very earliest Biblical times. It was by building the "Tower of Babel" of brick that the "Babylonians" hoped to span the space between earth and heaven. The Babylonians as early as 3000 B. C. built structures of brick—brick which is still sound. The modern town of "Hillar," with a population of 8,000, is today almost entirely built of brick taken from the buried palace of "Nebuchadnezzar." Every brick manufactured in the time of that bearded old tyrant was stamped with his name. That, so far as we know, was the first use of a "trade mark." Many of the brick made in those days had enameled or glazed surfaces which have retained their color to the present time.

The children of "Israel" were required to make brick for "Pharaoh" during their bondage in Egypt; and it was the decree which required them to furnish their own straw in the making of these brick that was directly responsible for the "Exodus." But with the Egyptians, as later with the Greeks, brick was a supplementary material. Their proximity to stone and the cheapness of their "slave" labor naturally made stone the dominant building material in these countries, particularly since they were ignorant of the fact that brick was the more durable material.

ROMANS DEVELOP BRICK ARCHITECTURE

It remained for the Romans, the greatest engineers and builders of ancient times, however, to realize fully the possibilities of brick and to extend its uses to every kind of structure. They were the first to use burnt brick exclusively. They were also the first to discover many principles of construction which are used even down to the present day. With the expansion of the "Roman Empire" brick penetrated every corner of the European continent and found its way across the channel to the British Isles.

Meantime, the Chinese developed brick to such perfection that it has stood in the "Great Wall" for centuries. This wall, which was ten years in building, was finished about 211 B. C., and such was the character of its construction that it is still sound.

The Saracens also developed a brick of their own and gave Europe lasting examples of their art in the "Alhambra" and other buildings they left behind them following their meteoric sweep across Southwestern Europe.

In the "Middle Ages" brick was the most popular building material in Holland, the Netherlands, Italy, and parts of Spain. Each country developed its own practice, leading to a great diversity in brick architecture. In England during this period, brick was largely covered with "compos," a practice abandoned in the beginning of the fifteenth century, when England began to perfect its brick architecture and gave to the world buildings which set the standard until the present generation of American architects began to realize the possibilities of brick.

At the present time brick is the predominant building material in every civilized country. And the United States, whose building policy has never been worthy of its advance in the industrial field, is finally taking its place at the head of brick development.

BUILDING IN AMERICA

It is a strange fact that the United States, in which material progress has gone to lengths never before reached in the history of the world, should, until recently, have been the least progressive in the matter of building. In the early Colonial days economic conditions were such that it was only natural for all Pilgrims to construct practically all of their buildings of wood. But why we should persist in building of the most inflammable and least stable building materal is one of the riddles of history.

The conditions which made wood the most economical building material have long since passed. When the forefathers landed there was a generous supply of timber on every hand. All that was necessary to make a house secure from the severe climate of New England was to cut down trees and build thick walls which could resist every kind of weather. There was an additional reason for this form of building, for there were no brickmakers among the earliest colonists. Not until 1634 was the first brick house built on the American continent. That was built in the town of Medford, Mass., by Governor Craddock, of Massachusetts colony, and was constructed of brick brought from Europe. This structure has stood as a monument to the durability of brick for almost three centuries.

So far as we know, the first brick in America was made in the New Haven Colony in 1650 but very little was manufactured until after the revolution.

But while brick was not extensively used, the most sacred monuments which we have of those early historical days were built of brick—the "Old State House" and "Faneuil Hall" in Boston, "Independence Hall" in Philadelphia, the old home of "William Penn" and the "Betsy Ross House" in which the first American flag was made. It has been possible to hand these down as an inspiration from generation to generation simply because they were built of brick.

Until comparatively recent times, wood in the ordinary building was the only material which was given any consideration. Only the pretentious houses of the rich and important commercial buildings were built of any other material, and in this class of buildings brick has always been the predominant material. Wood is, however, no longer cheap. Practically all the sources of timber within the reach of the great centers of population have been exhausted. Lumber must now be hauled hundreds and, in many cases, thousands of miles, to market. Both the scarcity of the material and the high cost of transportation have taken from frame construction the only virtue it ever possessed—cheapness.

EXPERIMENTS WHICH HAVE NOT PROVED SUCCESSFUL

Since this condition has come about, the inventive American mind has been working overtime trying to find some substitute for wood in economical building. In our own day builders have spent much time and money in trying to make "stucco and cement" construction a success, but so far they have not been rewarded with any achievement worthy of note. This form of construction was borrowed from European countries where the coat of stucco or cement has always been put on solid walls of brick or stone as a background, and where climatic conditions differ greatly from most parts of the United States. Some attention has also been given to concrete, and while this is adapted to some forms of building, it has not yet been applied successfully to small buildings. The best that can be said of all these makeshifts is that they are experiments, which have not yet proved themselves.

A very good illustration of this fact is a recent residence erected by a man whose energy is devoted to persuading people to build "stucco" houses. This man erected a fine house on one of the best known residence streets in a large western city, and presumably it was in every way built in accordance with the most approved methods of this form of construction. Yet before he moved into this house, large rifts and cracks had marred its exterior.

If one conversant with the best methods of building stucco houses meets with such failure, what hope is there for the owner who is inexperienced and who must depend entirely on others in the building of his house?

Thru all these changes and fads in building construction the best houses have continued to be built of brick, for the simple and sufficient reason that for beauty and permanency no other material has ever approached it; and now, in our own time, in addition to these advantages, other materials have so nearly approached brick in cost that brick is also the most economical building material.

ADVANTAGES IN BUILDING WITH BRICK

I have already suggested that no building material possesses the advantages of brick, and without going too deeply into the matter, I wish to bring a few of the more important ones to your attention.

There are so many examples of the beauty of brick construction in almost every locality that merely to suggest this advantage is sufficient. The best evidence that brick is the most durable of all building materials is the very history of brick itself. But there are other considerations as important as these.

After most exhaustive investigations, insurance experts, architects, Chambers of Commerce, and the United States Geological Survey have come to the conclusion that no building material yet discovered even approaches brick in fire-resistive qualities. Nothing has more forcibly brought this fact to the attention of the American public than the San Francisco and Baltimore fires. The only walls that came through these disasters, that were fit to be used again were built of brick. The reason for this is self-evident. This advantage in brick construction is further emphasized by the fact that the difference in the cost of fire insurance on brick and frame houses is from 25 to 50 per cent. in favor of brick.

Another important consideration in every building is the cost of maintenance after the building is completed. No house so nearly maintains itself as a brick house. Every other form of construction requires constant attention. The one item of painting soon makes up for the difference in first cost between frame and brick construction. The annual cost of upkeep and repairs on an ordinary frame house costing $10,000 is $250, or an annual tax of 2½ per cent. on the original cost of the building, according to statistics gathered by the Committee on Fire Prevention of the Boston Chamber of Commerce. The percentage practically holds, no matter what the size or the cost of the building.

Aside from this consideration of the increased cost of maintenance in other forms of construction, a brick house is the only house whose value does not depreciate from the very day it is built. There are many instances in every community where brick houses, after years of service, have been sold for more than their original cost. This fact alone makes the brick house a much more stable form of investment than a frame house, for the selling value of the house is the only tangible index of its value.

Another saving which comes with a brick house is in the matter of heating. A brick house not only requires a smaller heating plant than a frame building of the same size, but also saves from 20 to 25 per cent. of fuel. Furthermore, all the inconvenience and cost of frozen plumbing are eliminated in a brick house. Without entering into details, everyone knows that there is no cooler house in the summer than a well-constructed brick house.

These advantages have long been conceded to brick, but thru force of habit persons look upon brick as an expensive form of construction. People who must necessarily economize in building have come to regard brick as beyond their means. Yet it is a fact that the more one is forced to economize, the less one can afford not to build of brick.

COMPARATIVE COST OF BUILDING

I do not maintain that brick construction is cheaper in first cost than frame or stucco. What I do claim for it is (and I have ample ground upon which to base this claim) that brick is the most economical form of construction. The difference in first cost is so slight that it is only a matter of a few years before the saving in the expense of maintenance, in fuel, fire insurance, etc., more than makes up this difference.

This matter of the comparative cost between brick and frame has been given a great deal of consideration in the last few years by committees on fire prevention, which have been appointed by civic bodies in many cities. While the primary object of these investigations has been to find some remedy for the great annual loss by fire in American cities, almost all of these committees have taken up the "relative cost" and maintenance of various forms of construction to show that brick buildings, which are most fire-resistive, are also the most economical.

The relative cost of building materials very naturally varies greatly in different localities, due to proximity to one or another form of construction material. It has been possible, however, from all these reports to arrive at an average cost, from which the cost in different sections will not vary greatly.

The greatest difference is between all frame with clapboard exterior and a 13-inch solid brick wall with exterior facing of a high grade front brick. This difference, however, is only 10.7 per cent. The difference between a clapboard house and a brick veneer on frame studding is 3.3 per cent.

It is always well to bear in mind, in considering the relative cost of brick and other forms of construction, that the difference in cost is entirely the difference in cost of the outer walls of the building. The interior construction of the building, which is after all the largest item in the cost, is practically the same in all kinds of structures.

SHORT COURSE SCHEDULED *at* U. *of* I.

THE UNIVERSITY OF ILLINOIS Short Course in Ceramic Engineering will be given January 7-19, 1917. The course will be under the direction of Professor E. W. Washburn, head of the Department of Ceramic Engineering, and A. V. Bleininger, Ceramic Chemist of the United States Bureau of Standards, assisted by Professors C. W. Parmalee and R. K. Hursh, of Illinois, and a corps of lecturers on special topics.

The two-weeks' course is intended to cover in an elementary and practical manner the scientific principles underlying the practice of clayworking. A common school education will suffice for the work of the course and no tuition fees will be charged. The course is open to all who are interested The following subjects will be treated by means of lectures, conferences, and laboratory work:

The Physics and Chemistry of Ceramic Materials and Processes, 15 lectures; Ceramics and the War, 1 lecture; by E. W. Washburn, professor of Ceramic Chemistry.

The Origin and Classification of Clays, 3 lectures; Prospecting and Sampling, 1 lecture; The Testing of Clays, 4 lectures and 8 laboratory periods; by C. W. Parmelee, professor of ceramic engineering.

The Winning of Clays, 2 lectures; the Use and Conservation of Fuels in the Burning of Clay Wares, 2 lectures; The Handling and Transportation of Materials, 1 lecture; The Principles of Drying, 3 lectures; by R. K. Hursh, assistant professor of ceramic engineering.

Engines and Boilers, 3 lectures; by A. P. Kratz, research associate in mechanical engineering.

Explosives and Blasting, 1 lecture; by E. A. Holbrook, superintendent of the Urbana station of the U. S. Bureau of Mines.

Steam Shovel Methods, 1 lecture; by H. H. Stoek, professor of Mining Engineering.

Boiler Waters, 1 lecture; by W. F Montfort, acting professor of sanitary chemistry.

Kilns and Kiln Construction, 3 lectures.

The Shaping of Clays, 2 lectures; The Design and Use of Dies, 2 lectures.

The Composition and Properties of Coal, 1 lecture; by S. W. Parr, professor of applied chemistry.

Gas Producers, 2 lectures; by Dean C. R. Richards.

Burning, 3 lectures; Refractories, 3 lectures; by A. V Bleininger.

Dynamos and Motors, 2 lectures; by I. W. Fisk, assistant professor of electrical engineering.

The Legal Rights and Obligations of Employer and Employe, 2 lectures; by E. H. Decker, professor of law.

The Scientific Selection, Management and Utilization of Labor, 3 lectures; The Purchase and Conservation of Materials and Supplies, 1 lecture; by Mr. Dwight T. Farnham, industrial engineer.

Lubricants and Lubrication, 2 lectures.

The Location, Control and Care of Machinery, 3 lectures; by G. H. Radebaugh, acting director of shop laboratories.

Elective courses (1) in drafting; (2) in chemical laboratory work and (3) in bodies and glazes, will also be offered.

A bulletin describing in detail the courses and methods of instruction will be issued by the University in December and this will be sent free to all who request it.

Nebraska Clayworkers in War Convention

The Nebraska Brick and Tile Association, as a member of the Nebraska Manufacturers' Association, took an active part in the War Convention of Nebraska Business held on November 14 and 15, at the Lincoln Hotel, Lincoln, Neb., which, according to those who attended, was very much of a success.

J. Philip Bird, general manager of the National Association of Manufacturers, led off Wednesday afternoon with a splendid talk on the subject of the Relation of Industry to War. He spoke again at a dinner given that evening by the Lincoln Commercial Club where he made another big success. Mr. Bird made a very strong impression on the minds of Nebraska business men as to the seriousness of the present war and the absolute necessity for the patriotic and unselfish co-operation on the part of every business man in this country.

Hon. John L. Kennedy, of Omaha, administrator for Nebraska, made a stirring patriotic address in which he appealed to the patriotism of the people to support the government in its effort to conserve coal. Ballard Dunn, special representative of President Calvin of the Union Pacific and Oregon Short Line Railroads, gave much interesting data relative to war-time transportation and those who followed his address closely will be better able to determine what future conditions will be.

On Thursday morning, E. R. Gurney, vice-president of the First National Bank of Fremont, Nebraska, most ably presented War Time Finance. His thoughts were put together in a convincing way and that he made a deep and lasting impression upon his hearers was evidenced by the many favorable comments heard from those in his audience.

The question looked upon by many business men who were present as a most important one was the conference on the new war tax law, the discussion of which was led by C. B. Stiver, of Des Moines, who for a number of years was in the government revenue service. Many questions were asked Mr. Stiver from the floor, all of which he answered promptly except in cases where it was a matter of interpretation he told them frankly he could not answer until the point had been decided by the Commissioner of Internal Revenue or the Supreme Court of the United States.

The Nebraska Brick and Tile Association was well represented at the meeting. Plans are already being made for the annual school-convention to be held in January, 1918. This, of course, is the big meeting of the year and the members are looking forward to a good program. Plans are being made to have a program somewhat different than those staged in the past, and it is hoped that a large attendance will be realized.

* * *

Administrator Suggests Brick as Fuel Saver

Fuel Administrator Robert B. Blakemore for the counties of Cass, Steele, and Traill, North Dakota, has suggested the use of brick in providing for a satisfactory fuel for heating. The directions are as follows: soak a dozen brick in kerosene for several hours, place one or two in a common airtight sheet iron stove and ignite. The kerosene in the brick will burn for an hour or more and the brick will become red hot. They will continue to radiate heat for several hours after the kerosene has been burned out. There are no ashes and the brick can be soaked and used again until worn out, which takes a long time, according to the administrator.

* * *

SOLVING *the* DELIVERY PROBLEMS

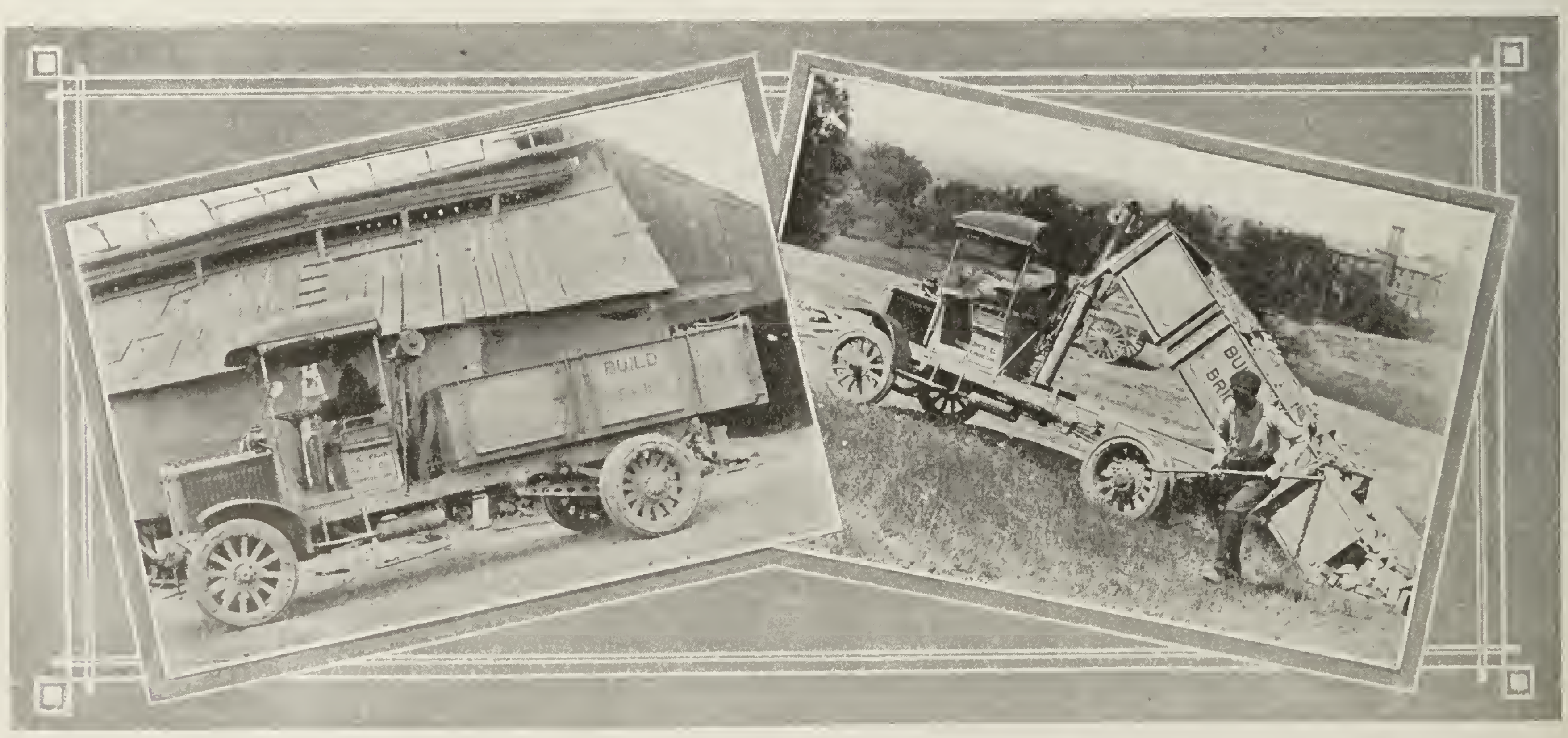
THAT THE MOTOR TRUCK is the most logical and effective solution of the delivery problem is the conclusion reached by the Park Brick Co., of Hartford, Conn., after fifteen months' use of a three and one-half ton truck.

Located in the suburb of Elmwood, a distance of about three and one-half miles from the center of Hartford, the company is compelled to make runs that are, on the average, too long for profitable delivery via the horse and wagon route, but which, by the use of a truck, are very expeditiously and economically handled. From six to seven trips are made to the city daily and frequently there are long runs into the suburban points, at which time the efficiency of motor truck delivery is especially marked.

Altho the company is unable to give any definite figures on the cost of operation and upkeep of the truck, they assert that it will do from two to three times the amount of work which could be accomplished by team haulage. To this is added the advantage of greater speed, enabling the company to render better service to its customers, and the assurance that illness will not cripple the delivery system, as it sometimes threatened to do in days of the horse.

The car is kept in the brick yard and is operated twelve months in the year. That it may work to better advantage it is used to carry haul during the winter. Fitted with a hydraulic hoist, the truck makes short work of unloading. When the brick are to be delivered on the job instead of at the curb, two men are required; otherwise but one workman is employed to make the delivery.

The company manufactures common brick, selling in Hartford at $15. Its yards are alongside the main tracks of the railroad and a spur runs under the sheds. Little of its output is shipped by rail, however, since the bulk of its business is within a radius which can be served by the truck.



From the Plant to the Job, a Problem That Has Lost Much of Its Dire Significance Since the Park Brick Co., of Hartford, Conn., Supplanted Its Teams With the Truck Shown Above.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

Article Twelve, Dealing With the Territorial Application of Rates the Method of Constructing Thru and Combination Rates.

By Sydney A. Hale

SYNOPSIS: Freight rates, which enter as an element of cost in the conduct of every business, must be considered from three viewpoints, viz., commodity, quantitative, and territorial application. At the basis of all rate-making is the freight classification from which spring class rates, exceptions to the classification, and finally, commodity rates. From the quantitative side, the unit of rate statement is the hundredweight, while the unit of movement is either carload, less-than-carload, or any-quantity. In the case of carload rates, the carload minimum weight is the important quantitative factor, while with less-than-carload and any-quantity rates, the minimum charge, which in turn is based upon a minimum weight, is controlling. The third division of the question, territorial application, is the subject of the present article.

THERE CAN BE but one rate in effect over a thru route between two points at a given time. This rate may be a joint rate or a combination of rates applicable on thru business. Where no joint thru rate is in effect, a combination thru rate may be made up of any rates applicable on thru transportation—the sum of the locals, or a proportional rate in and a local rate out, or two or more proportionals, or any other lawfully established rates which may be joined together to make a rate over the thru route—In re Thru Routes and Thru Rates, 12 I. C. C., 163.

TERRITORIAL APPLICATION OF RATES

Analysis of the application of any road-haul freight rate involves consideration of the commodity moved, the quantity transported, and between what points the service is rendered. As in the case of commodity and quantitative application, the determination of the legal territorial application of a rate must be predicated upon a knowledge of the manner in which tariffs containing such charges are interpreted. Territorially speaking, the primary division of rates is into local and thru charges. Thru charges are further subdivided in accordance with the manner in which such rates are constructed and published.[†]

A manufacturer of woodenware, located at Menasha, Wis., receives an order for a carload of his product from a Chicago jobber for shipment via the Chicago & Northwestern Railway. Both Menasha and Chicago are served directly by the carrier named so that the transportation service rendered would be entirely over the rails of that company. The freight rate charged for the movement, therefore, would be a local @ rate.[*]

Commerce, however, is not limited in its movement to the terminal of individual railroad lines. If the Menasha manufacturer received an order from New York, the obligation would rest upon the carriers to furnish a thru route for the carriage of such shipment. In other words, provision must be made whereby the shipper will not be required to take possession of his shipment at the terminus of each individual road and make new arrangements for its further transportation over other lines to the ultimate destination. Hence we have thru rates, or charges applying over the lines of more than one carrier.

MANNER OF CONSTRUCTING THRU RATES

The different ways in which thru rates are constructed may be illustrated by continuing the adventures of the Menasha shipment. Inasmuch as the Northwestern is the initial carrier, the manufacturer would look to it in the first instance for thru rates. Anticipating such a movement of freight, the traffic officials of that road might confer with those of an eastern road out of Chicago, such as the New York Central, and the two lines agree upon a rate to be charged for the entire service. The rate so established would be a joint thru rate.

Inability of the carriers to so agree, however, can not be permitted to act as a bar to the thru movement of commerce. If the New York Central declined to join with the Northwestern in the establishment of a point thru rate, shipments would still be possible. The rate in the latter case would be the sum of the local rates from Menasha to Chicago and from Chicago to New York. Such a rate is known as a combination thru rate, or combination of locals. A thru charge might also be constructed by a combination of local and joint thru rates, such as the local to Chicago plus a joint rate to New York via the Wabash from Chicago to Buffalo and the Delaware, Lackawanna & Western Railroad from Buffalo to New York.

PROPORTIONAL RATES AS FACTORS

While unable to persuade an eastern carrier to concur in the publication of a joint thru rate—and without the concurrence such a rate could not be established—the initial line might be of the opinion that a combination of the full locals would be unreasonable. It might be convinced that its rate to Chicago was just for a local movement, but excessive when used as a factor in constructing a thru charge from Menasha to New York. The problem of establishing a reasonable charge for its portion of the thru rate without destroying its existing rates on local business would be solved by the publication of a proportional rate, which, as its name implies, is simply part of a thru charge.

[†] See the third article in this series.

[*] The qualification of "local" is often used in railroad phraseology to designate a station served by but one line, as distinguished from a "competitive" point served by two or more carriers. In the illustration used, rates between Menasha and Chicago are local for the reason given, altho neither point is served exclusively by the Chicago & Northwestern Railway. The rates, therefore, are local, while traffic between such points would be competitive. "Junction points" may likewise be either local, if simply the junction of two divisions of the same line, or competitive, if the juncton of two or more different railways.

Generally speaking, proportional tariffs establish rates which are lower between given points when the traffic has undergone transportation before reaching the first point or is to be further transported after reaching the second point than the rates charged upon traffic which originates at one of such points and terminates at the other. Under this principle, the Northwestern would publish a lower rate on woodenware from Menasha to Chicagi "when destined to points east thereof." This rate would then be properly applicable as a factor in constructing a thru charge from Menasha to New York. Likewise, the eastern line might publish proportional rates from Chicago to New York, limiting their applications to "traffic originating north or west of Chicago." Thus the combination rate might be the sum of two separately established proportional rates instead of a combination of locals.

PROPORTIONAL RATES IN GENERAL USE

The proportional rate is a device largely employed in tariff publication thruout the country. It is frequently used to obviate the establishment of a large number of specific thru rates by naming proportional rates to important centers less than the local rate and providing that these proportionals shall be used in combination with local rates to points beyond where no thru rates from the first point of origin are in effect. Similarly, it is used in constructing rates between different rate group territories. Proportional rates may also be a factor, particularly if accessorial services‡ are rendered, where both originating point and ultimate destination are located upon one road.

Subject to the legal standards laid down in the Act to Regulate Commerce, the application of proportional rates may be limited in such measure as the publishing carrier sees fit. Thus the rates may apply only upon traffic originating within or moving to a defined territory or coming from or destined to points on certain connecting lines. Where a proportional rate is a factor in a thru charge, the restrictions upon its use must be strictly observed. Failure so to do will make such rate non-applicable.

What has been said above applies equally to class and commodity rates. The discussion also presupposes that the rates are specific as to points of origin and destination. There are, however, another class of rates which are not specific. These are distance tariff rates, naming the charge for transportation a stated number of miles rather than between specified stations. Distance commodity rates take precedence over distance class rates in the same manner that specific commodity rates supersede specific class rates. Neither may distance rates be used in combination or by themselves in preference to any specific rate. When a tariff names both specific and distance rates, the carrier may provide that the distance rate will apply when it makes a lower charge than the specific rate.**

---

‡The nature of accessorial rates and services will be considered in a subsequent article.

**The principle here is analogous to that governing the alternative use of class and commodity rates; see the sixth article in this series.

* * *

Clevelanders Prepare for French Lick

H. E. Kemper, L. A. Krueger, and J. T. Morrisey, managers of the brick departments of the R. L. Queisser Co., Cuyahoga Builders' Supply Co., and the Cleveland Builders' Supply Co., respectively, and as many more members of the Cleveland Brick Club as can possibly get away, will attend the coming convention of the Face Brick Dealers' Association of America, to be held at French Lick, Ind., December 12, 13, and 14.

The Clevelanders expect to journey in a body to the convention center and en route demonstrate to Newlywed Morrisey the ins and outs of married life, as Mr. Morrisey has just returned from his honeymoon. Tough luck, Jim, has just returned from his honeymoon.

* * *

Gives His Life for His Country

The first Syracuse (N. Y.) boy to give up his life for his country was an employe of the Onondaga Vitrified Brick Co., Private Howard E. Rawlings.

News of Private Rawling's death was cabled by General Pershing to Washington and telegraphed to his relatives in this city last week. His death occurred November 15, at the camp of the American Expeditionary Forces, after a brief illness from pneumonia.

Young Rawlings was 24 years of age. Up to last July he worked at the Vitrified Brick Co.'s plant, resigning his position there to enlist in the Forty-Seventh Infantry, then at the local mobilization camp. Later he was transferred to a rapid fire machine gun company of the Ninth Regiment. Still later he was made a first class private and assigned to the headquarters company.

* * *

Prices Stationary At Kansas City

Prices at Kansas City on clay products have remained somewhat stationary, only in a few instances has a fluctuation been noticeable. The tendency in this regard is toward an increase, altho manufacturers and dealers declare that an increase before the first of the year is not looked for. Common brick is still being quoted at $11.50 per M, standard nine inch fire brick of No. 1 clay is now $50.00 per M, fire clay in 100 pound cloth bags is $15.00 per ton, and hollow building tile 4x5x12, $35.00 per M. Hollow building tile 5x8x12 is $60.00 per M. Drain tile, three inch is four and one-half cents per foot and the four inch is five and one-half cents per foot. Clay partition tile 3x12x12 is $60.00 per M, and the 4x12x12 is $66.00 per M.

* * *

Priority Rule Works Double Hardship

An example of the effect of the priority ruling is cited by the Medal Paving Brick Co., Cleveland, Ohio. This firm has not had a car at its Wooster plant for the last several weeks. A box car is arriving at each plant every four days. Because box cars are so scarce, and because of the clause that prohibits the use of open top cars for shipment of road building materials, a double hardship is worked upon the building and paving brick manufacturers. These conditions, H. C. Moatz, of this company, points out, will not only prevent prices from reacting, but will tend to increase costs of production and handling.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Defying the Weather Man

A circus on a brick plant might be the head written for this item judging from the view below. However, the ring inside of the tent shown is somewhat different than the circus circle, in that it is constructed of brick and forms part of the wall of a new 38-foot (inside diameter) kiln. The canvas tent offers a protection for the workmen and the kiln, preventing the rains and snows of the present season from interfering with the work of constructing the kiln. This kiln is being constructed on the large, modern plant of the Standard Refractories Co., at Claysburg, Pa. Since it will be a kiln in which high temperatures are required, the need for careful construction, especially of the firebrick lining, is imperative. The tent helps to produce conditions under which first class work can be done.

This Large Canvas Tent is Used on a Pennsylvania Plant to Protect Kiln Builders from the Cold and Rain, and to Prevent Elemental Conditions from Hindering the Work of Construction.

* * *

Keeping Dryer Steam Pressure Constant

A slowing up of dryer capacity is responsible in a good many instances for the lowering of plant capacity and a congestion of loaded dryer cars ready to be shoved into the dryer. Very often this slow drying may be traced to the fireman neglecting to keep up the required steam pressure.

To check up on the fireman the Elk Fire Brick Co. have found it advantageous to install a recording pressure gauge on the main steam pipe in the boiler room of their Daguscahonda, Pa., plant. In this way a constant record of the steam pressure is had and it also serves to keep the fireman on the job.

* * *

Training Understudies

No detailed explanation is required to show the necessity of having more than one man skilled at a particular kind of work. Take, for instance, the man tending the pugmill. If he is the only one on the plant who is competent to do that work, his absence for one day throws a monkey wrench into the machinery that results in a big loss in time and a large amount of spoiled ware.

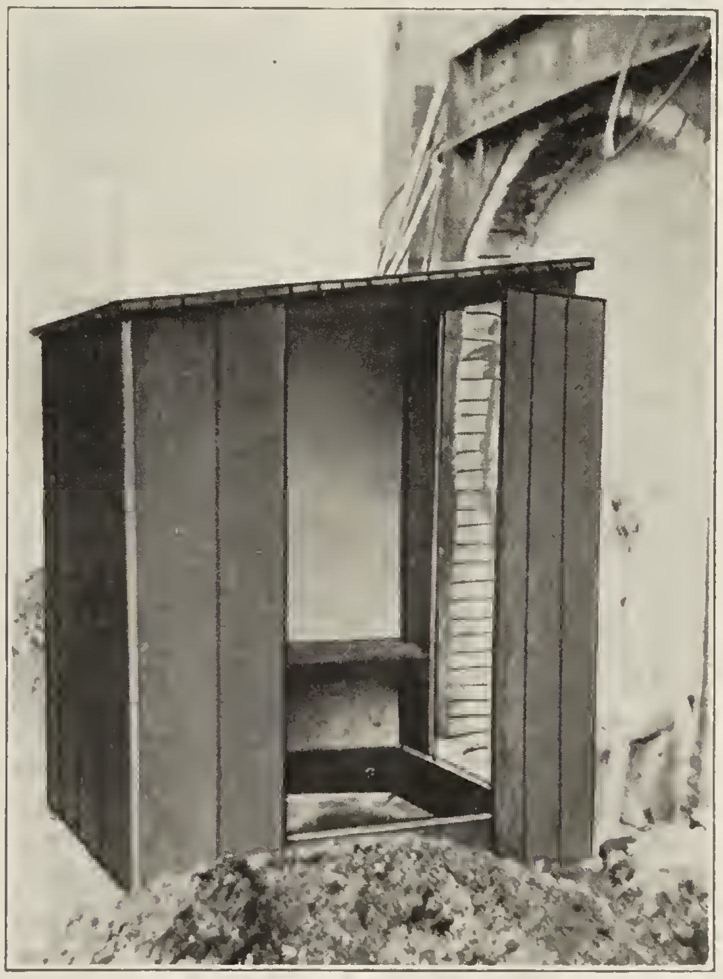
In an electrical conduit plant where six and nine-hole conduits are being made, two men alternate in off-bearing each large tile from the cutting table and transferring them to a belt conveyor which carries them to the dryer cars. A great amount of skill is required in this operation. The conduits are very easily misshaped and considerable training is necessary before the workman acquires the knack of handling the pipe properly. At this particular plant, however, there are four men skilled in performing this operation and, according to the foreman, the fact that there was always a competent substitute for one of the "regulars," should one fail to report for work, has saved cosiderable ware from being damaged by green hands.

There are many positions on the brick and tile plant which require skill, and for every one of these positions there should be two or more men trained. It is a principle of safety first that pays big dividends.

* * *

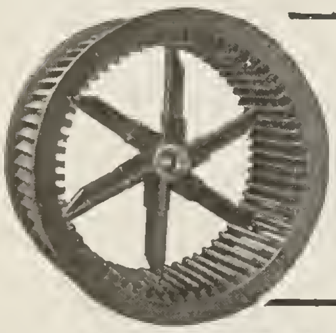
A Portable Burners' Hut

Pleasant surroundings and comfortable working conditions go a long way toward keeping labor on a plant. Of all the laborers on a clay plant the burner probably has the most unpleasant conditions to work under.



This Portable Hut, Used to Keep the Burners Warm in Cold Weather, Has Several Advantages, Two of Which Are That it Can Be Moved Close to the Kilns Being Fired, and That it Eliminates the Fire Hazard of the Stationary Hut Stove.

Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited

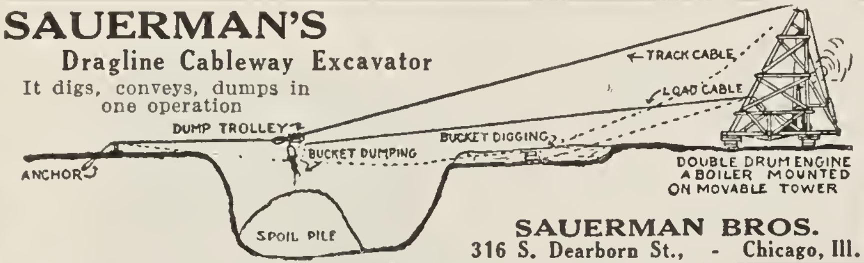


CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo, Michigan, U. S. A.

GOODRICH Belts
"Commander" Transmission and "Longlife" Conveyor Belts are unbeatable for the Brick and Clay industry.
THE B.F. GOODRICH COMPANY
Factories: AKRON, OHIO Representation Everywhere

DO YOU NEED MONEY?
We Specialize in Bonds on Clay Properties.
We Arrange for Their Issuance and Sale.
We have rendered aid to many clay product manufacturers desiring to expand and improve their properties.
Write Us—Perhaps We Can Help You
F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILL.

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.

"SCANDINAVIA"
(Solid Woven Cotton Belt)
TRULY THE BRICKMAN'S BEST BELT
Scandinavia Belting Co.
106-108 Reade Street, New York
Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.
Canada: Federal Engineering Co., Limited, Toronto and Montreal.

They Do Produce Results
We refer to
Those little ads you have noticed in our Classified Ad Pages.
It is the decision of concerns who have used them. Try one.
Brick and Clay Record

Endeavoring to improve these conditions, most plants have constructed stationary burners' quarters at one end of the plant or in the center; some have small movable huts of the type shown in the accompanying photograph. These small movable huts which are placed in front of the kiln wicket during the burn, catch a portion of the heat radiated from the kiln and provide a place of shelter and warmth for the burner in winter. It is very simple in construction and costs but a very small sum to build.

A particular advantage of this method of providing shelter is that it brings the burner closer to the kiln which he is firing and usually results in better work than if only one large central quarters was provided. The hut illustrated here is one of the best forms which we have seen and to those plants which have not made use of this idea it may serve as a model from which to build.

⁂

Conservation of Coal in the Power Plant

In a recent bulletin issued by the Chamber of Commerce of the United States, addressed to owners and managers of power plants, the following suggestions are offered:

Costs of production have more attention today than ever before. The costs of coal for generation of power has in many instances not had the same consideration as other costs, because coal has been cheap and obtainable in abundance; cheap coal and cheap labor sometimes made it apparently economical in dollars and cents to install and run an inefficient plant.

Coal has now become expensive. It is hard to obtain. Efficiency in its use and avoidance of waste have become of first importance, since without power other materials cannot be utilized.

These conditions make it imperative for every owner or manager of a power plant to examine into the cost of the power his establishment uses, the economy with which it is generated and applied, and the increase in efficiency that is possible. Some of the steps that an owner or manager should take are to:

Reconsider the advantage of buying heat and power from a specialized plant that makes nothing else and can afford the investment and supervision that gets a maximum of value out of each pound of coal; in some localities hydro-electric power may be available.

Find the nearest source of coal that will meet the requirements even if it does take a little more trouble to use it; the tax on the transportation system will thus be reduced so far as haulage by rail is shortened; coal is mined in twenty-six states, and these states extend practically across the continent and from the northern to the southern borders.

Give to the power plant and its personnel recognition and encouragement such as is due an expert and important department, thus getting new effort and attention to offset the extra attention and care needed with coal inferior in grade and preparation to the coal formerly available.

Seek to increase skill and proficiency in the men who handle the coal; a fireman at a hand-fired boiler shovels three to ten tons of coal a day,—or as great a value in material as many skilled men in other departments.

Put the fuel-using equipment into as perfect condition as possible; provide at hand-fired plants an ample firing floor with a good surface, together with a smooth-bottomed coal car if it can be used; eliminate leaks in the boiler setting, see that fire-doors fit properly, replace de-

fective grate bars, make sure that smoke connections are clean and tight; if mechanical stokers are used, see that they are in good repair and that directions for using them are being followed; in general, make the plant and the fire-room of such character that an efficient man will stay on the job.

Install simple and convenient means by which the fire-room force may see results; scales for weighing fuel and ash, meters for measuring water fed to the boiler, and devices for determining the quality of flue gases, the draft over the fire, etc., can be made to interest the men in the fire-room and show the actual results of efforts to economize; convenient means for operating the flue damper must be installed.

Endeavor to run boilers in service at their capacity; if efficiency is increased, one or more boilers in a battery may be dropped.

Provide water that is free from scale by using, when necessary, water-treating devices if the plant is large and special feed-water heaters in small plants

Reduce loss of heat after it is generated; see that boiler surfaces and steam pipes are properly covered; the simplest and most inexpensive covering will reduce loss by eighty per cent; in the engine room cut out useless steam lines, have valves properly set, reduce the small auxiliary pumps, etc., to a minimum, provide the repairs the engineer has been asking.

Obtain expert advice; good steam engineers are familiar with well-tried ways of reducing both consumption of coal and consumption of heat; their advice should be obtained in all practical cases; this is not a time for radical innovations but for utilizing tried experience.

One pound of coal per hour has yielded a horsepower per hour. That is the record of present possibility. It cannot by any manner of means be attained by every plant. But the fact that at present the average attainment thruout the country is but one-third or one-fourth of this record is indicative of the possible savings that can be made if the care and attention which the power plant deserves are actually given to it.

The suggestions which have been given above are typical of the points about which every owner and manager of a power plant should assure himself. The applicability of any general suggestions will vary with nearly every plant.

Most users of coal can join in promoting efficiency of coal. Railways have made real progress in firing locomotives; they can often go farther. Gas works can generally effect further saving by using careful technical direction. Manufacturing plants of every degree can show great results in the aggregate.

The Bureau of Mines on behalf of the federal government has gathered a great deal of information about the use of coal and has expert advice to give regarding means of economy. Some of the publications in which the Bureau of Mines has embodied the results of its experiments and made practical suggestions based upon expert observations and conclusions of its staff and other engineers should be sent for. In many instances state agencies, too, have data and suggestions which are to be had for the asking.

⁂

Valley View Lime, Clay & Coal Co., Sugar Creek, Ohio, incorporated, capital $30,000; R. D. Gus, Whit Johnson, Geo. W. Davies, Homer Shonk, Lloyd Shonk, Michael Reisweick, principals.

Uninterrupted service from belts is your due.

CRESCENT
BELT FASTENERS

are made to help you collect on money invested in belting. *It's your move.*

CRESCENT BELT FASTENER CO.
381 Fourth Ave. New York, N. Y.

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.
Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.
Approved by Nat'l Board of Fire Underwriters.

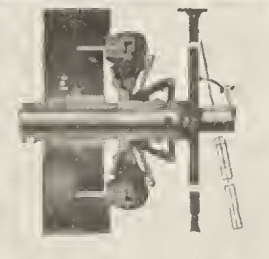
HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

One Way to Cut Cost—
Let our engineers give you a comprehensive layout showing how much more cheaply you can get your clay from pit to machine room.

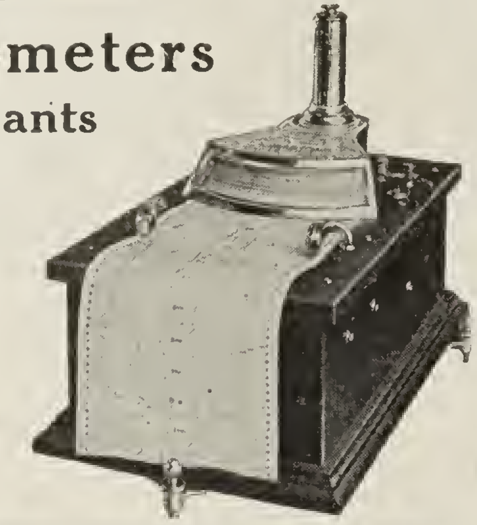
B & B Aerial Tramway Systems

are doing remarkable work for many clay plants—cutting out labor and unnecessary power.
Ask for catalog 16 and photos of installations.
BRODERICK & BASCOM ROPE CO.
New York St. Louis, Mo. Seattle

Hill Friction Clutches
Collar Oiling Bearings
and
Complete Power Transmission Machinery Equipments
Catalogs upon Request
The Hill Clutch Co.
Cleveland, Ohio
New York Office, 50 Church Street



Hill Friction Clutch Pulley
Smith Type
(Patented)



Price Pyrometers
on Small Plants

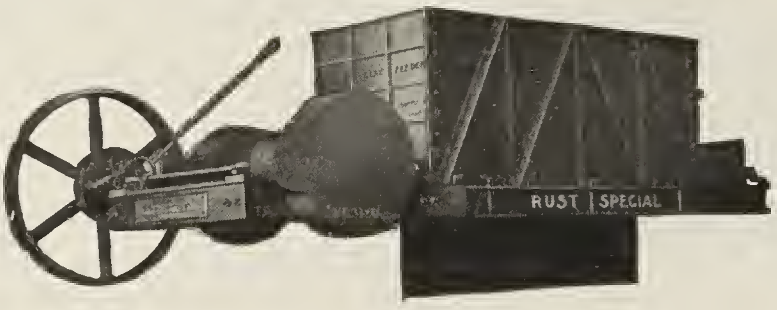
It isn't necessary that you have a large number of kilns before our pyrometer is valuable. It saves tons of coal, labor and time on the two, three and four kiln plant.

The Price Electric Co.
12367 Euclid Ave.
CLEVELAND OHIO

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana



They Drill
Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. It paid for itself in the first three months; it saves enough powder each year to more than pay for its initial cost."

This is interesting because it is a fact.

Send for Bulletin No. 4.

The Sanderson Cyclone Drill Co.
Orrville, Ohio

How to Analyze Clay

A practical work for practical people. A Text Book for Clay Analysis, by Holden M. Ashby, Prof. of Organic Chemistry, Harvard Medical College, and Instructor Chicago Night School of Chemistry. An Aid to Beginners and full instructions for making clay analysis. 64 pages, with illustrations. Postpaid to any address in the world, $1.00.

Brick and Clay Record
610 Federal Street, Chicago, Ill.

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

W. H. Crangle, Cleveland salesman for the Medal Paving Brick Co., Cleveland, Ohio, is now at Fort Leavenworth. Mr. Crangle is a second lieutenant.

John Stoner, president of the Cincinnati Clay Products & Supply Co., Cincinnati, a jobbing concern, was a recent business visitor in Columbus.

Claude A. Palmer, of the Eastern Clay Goods Co., of Boston, Mass., and a member of the Boston Chamber, has been elected a director of the Metropolitan Co-Operative Bank of Boston.

P. B. Mossman, treasurer of the American Refractories Co., is making an extended tour of the Coast on business. He recently spent several days in San Francisco.

Andrew Shephard, eighty-two years old, of Swissvale, Pa., died recently of old age. Mr. Shephard located in Swissvale about thirty-five years ago and since that time, until five years ago, was engaged in the manufacture of brick.

Mr. Dinghausen, of the Harris Brick Co., Zanesville, Ohio, was a visitor in Columbus late in November. He announced his retirement from the brick company to take an active interest in the Rusk Bros. Builders' Supply Co., of Mansfield, Ohio.

N. Triplett, a pioneer brickmaker of Spokane, Wash., died recently in the offices of his physician. His death was due to a hardening of the arteries. Mr. Triplett resided in Spokane for about twenty-five years, and until quite recently owned a brick plant in the Hangman Creek Valley.

Dudley H. Miller, of York, Pa., president of the Milton Brick Co., has become the manager of the Reading "Telegram and News-Times," published by the Reading Printing Co., and succeeds Walter F. Dumser, who is now in the employ of the government at Washington, D. C.

William Egle, president of the Egle Bros. Brick Manufacturing Co., of Detroit, Mich., was tendered a surprise party and dinner recently on the occasion of his fiftieth birthday anniversary. Covers were laid for 100 guests, included among whom were Mayor Marx and many city officials. Mr. Egle has been in the brick business for almost twenty-five years.

W. A. Alsdorf, secretary of the Ohio Good Roads Federation, spoke this week before the Cleveland Engineering Society on the relationship of public highways to the transportation requirements of the nation. Mr. Alsdorf also discussed priority order No. 2 which denies the use of open top cars for transporting materials for building and repairing public highways.

Charles J. Deckman, former president of the National Paving Brick Manufacturers' Association, and who retired from the Medal Paving Brick Co., Cleveland, Ohio, several months ago, has become identified with the La France Power Spark Plug Co., Columbus, Ohio. Mr. Deckman takes charge of Northwestern Ohio territory, with fifteen counties under his distributing supervision.

George P. Pope, of 871 Bushwick Avenue, Brooklyn, N. Y., died at his winter residence in Atlantic City recently at the age of forty-eight years. Mr. Pope was a man of large business interests, the principal one being the manufacture of brick. He was a very wealthy man and gave freely of this wealth to charities. Mr. Pope was also known as a collector of embroideries, rugs, paintings, and tapestries.

There are now fourteen employees of the Walter S. Dickey Clay Manufacturing Co. in army service of Uncle Sam. The Dickey company has two first lieutenants and one second lieutenant and three corporals in the service. Benjamin Brooks, of the engineering department, and B. R. Mullen, of the farm building department, are the two first lieutenants and Roy Cerns, of the architectural department, is a second lieutenant.

Robert L. Queisser, of East Cleveland, Ohio, who is well known in the face brick industry in Ohio, is the designer and holds exclusive patents on the widely used service flag. He is going to collect a ten per cent. royalty on flags made under the patent and will turn over fifty per cent. of his royalties to the Ohio Chapter of the Red Cross. Mr. Queisser was formerly a captain in the Ohio National Guard and has seen active service at various times.

Don S. Stophlet, of the Walter S. Dickey Clay Manufacturing Co., was one of the many Kansas Citians who recently received commissions in the army at Fort Sheridan, Ill. Mr. Stophlet was commissioned a first lieutenant of artillery. Mr. Stophlet, prior to taking the examination at Fort Sheridan, was connected with the Boy Scout movement at Kansas City and was also an officer in the Home Guard organization here.

W. Edwin Glossop, one of the well-known Louisville architects and member of the firm of Wart & Glossop, has been appointed city building inspector of Louisville by the new administration. Mr. Glossop has put up some very interesting brick and terra cotta buildings in Louisville. He is credited with designing the Louisville Y. M. C. A. and the Weissinger-Gaulbert Annex, two of the leading examples of modern brickwork in Louisville.

Paterson, N. J., has a new club of business men which is called the Kawannis. Modeled upon the same basis as the Rotary it admits only one in each line of business to become members. Nathan A. Sloan is the brick man. At a recent luncheon (one is held every Wednesday) he was one of the silent boosters, as they are called. That is, he was one of the two permitted to circulate their advertising. His boosting was accomplished by the presentation of two excellent cigars, to which was tied, with a bright scarlet ribbon, his business card, describing in some detail the many kinds of brick in which he deals. It is interesting to note that notwithstanding the slowing up of building in and about Paterson he has succeeded in holding his sales to a fair quantity.

It takes a man with considerable sense of the artistic in his make-up to successfully sell face brick, Frederic B. Stevens, of Detroit, president of the Frederic B. Stevens Co. told face brick salesmen gathered at a dinner of the Detroit Face Brick Credit Association in that city on Tuesday, November 13. "Face brick is a peculiar commodity," Mr. Stevens said, "in that it combines in itself both art and utility. To most buyers, face brick is a luxury, and one in which they realize their esthetic senses are called into action. It is easier to sell face brick to women than to men, because women usually have a deeper sense of the artistic. And the salesman should combine appreciation

ORIGINAL Boss SYSTEM COMMON SENSE APPLIED TO Drying and Burning ORIGINAL Boss SYSTEM

Boss Ten-Hour Dryer

Would you like to really dry your brick and do it in half less time?

Boss System of Burning Brick

Would you like to improve the quality of your brick and reduce your cost of burning?

Then write for information and we'll SHOW YOU HOW!

JOHN C. BOSS COMPANY
Monger Building - Elkhart, Indiana

SIL-O-CEL PREVENTS HEAT PENETRATION TRADE MARK
MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway CHICAGO Monadnock Bldg. PITTSBURGH Oliver Bldg. LOS ANGELES Van Nuys Bldg. SAN FRANCISCO Monadnock Bldg.

Write nearest Office for Samples and Information

FANS For every Dryer requirement. We will estimate for you and deliver promptly. Below is shown one of our installations on the plant of the Paterson Clay Products Co., Clearfield, Pa.
For estimates, plans or information address our Pittsburgh office, 8044 Jenkins Arcade Bldg., or the home office.

Blairsville Machine Company
Blairsville, Pa.

Specialists on Fans for Dryers

IN THE HEART OF THINGS

The House of Taylor

Hotel Martinique
Broadway, 32ndSt., New York
One Block from Pennsylvania Station
Equally Convenient for Amusements, Shopping or Business

157 Pleasant Rooms with Private Bath
$2.50 Per Day

257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure
$3.00 Per Day

Also Attractive Rooms from $1.50
The Restaurant Prices Are Most Moderate

400 Baths
600 Rooms

Watchfulness of conditions

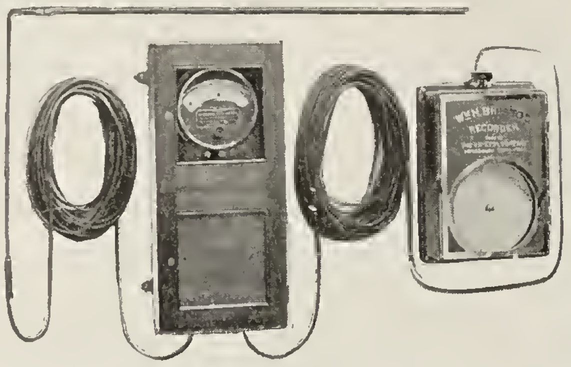
Both on the part of the operator at the kiln and also the superintendent are induced by the use of

TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.
Recording Pyrometers

which are every day showing new ways of promoting efficiency and rendering conditions of true economy. Thousands are in daily active use.

When you install a Bristol Instrument you are providing for the future. Many years of continuous service have given the real test.

Write for Bulletin 205.


Indicating instrument at the Kiln.
Recording Instrument in the Superintendents office

The Bristol Co. Waterbury, Conn., U. S. A.

A Pyramid of Strength

Rolls of

Hettrick Belting

PREPAREDNESS for the belt break

Get stocked up, anticipate the needs of every power drive and conveyor in your plant. Don't be caught napping—be ready to "put on" the very best clay plant belt, just **before** the old belt needs replacing.

The Hettrick Mfg. Co.
Toledo, Ohio

of its artistic qualities with his knowledge of its utility." Mr. Stevens was the leading speaker at the dinner, which was attended by thirty-two salesmen of different Detroit brick manufacturfers and jobbers.

California

The California Magnesite Co. has been incorporated in this city with a capital of $5,000. Milton Newmark, R. W. Murphy, E. A. West and R. M. West are the incorporators.

A new company to be known as the San Francisco (Cal.) Brick Builders, has been incorporated in this city with a capital of $50,000, by M. J. Mealey, J. L. Collins and O. I. Morton.

A large three-story brick warehouse is about to be built at the corner of Beale and Bryants streets for the Warehouse Investment Co., of San Francisco. It is estimated that the brick used in this structure will cost in the neighborhood of $100,000.

A greatly increased demand for chrome ore for making brick has been developed in California recently. The approach of winter when many of the sources of this material will become inaccessible, is one of the reasons for this demand at the present time.

The headquarters of the Stockton Fire & Enamel Brick Co. has been moved to 915 Rialto Building, San Francisco, Cal., where it has much more commodious offices than in the old locality. Growing business, even in these uncertain times, brought about the change of address.

Magnesite is being produced in increasing quantities by Frank R. Sweasey, at Rutherford, Cal. It is of excellent quality and much of that which is calcined is being shipped to eastern brickmakers. Some of the crude ore is also being shipped East, but most of it is being used by the local brickmakers.

A contract has just been awarded to H. E. Drake, of San Francisco, to furnish the tile partitions and terra cotta settings of a new eight-story concrete building on Pine street, between Sansome and Montgomery. The contract calls for nearly $15,000 worth of material. A number of other smaller contracts similar to this are being constantly let. In the aggregate they amount to considerable, but no really large contract is in sight in that city.

The Union High School at Palto Alto, Cal., for which bids were called several times and rejected because of the high cost of the structure, has so modified the original that successful bids have just been announced. At the last time bids were submitted it was estimated that the brick construction would cost about $50,000. By the modified plans this was reduced to $29,500. J. L. Wold & Co., of San Francisco, secured the contract for the brick at $20,000 and the United Materials Co., also of San Francisco, secured the tile contract for $9,500.

The Terra Cotta Products Co., which was recently incorporated, has secured a permit from the commissioner of corporations to float its securities. The company is incorporated for $150,000. Its plant is located at Telco, about eight miles below the town of Rio Vista and fifty miles from San Francisco. With its present equipment it is turning out about 60,000 feet of four-inch drain tile monthly. The plant will be greatly enlarged by the sale of capital stock. While the company has been confining its efforts to drain tile in the past it is now intended to manufacture tile of every description, chimney pipe, flue lining and hollow building blocks. The officers of the company are: E. T. Maple, president; T. G. Maple, vice-president, and J. R. Johnson, secretary-treasurer.

The brick industry in San Francisco, Cal., shows no changes. There is very little activity in any lines and most of the manufacturers and dealers find that their business is confined to meeting the immediate wants of customers. This demand is considerable and keeps the trade in a hopeful condition. There is practically no inquiry for future deliveries, however, and if there were it would be difficult to get a dealer to quote prices. While there have been no material changes in prices the labor market, as well as other factors, is so uncertain that no one would care to promise to deliver brick which he did not actually have on hand. The price of fire brick in San Francisco is the lowest in the United States and the price of common brick is also among the lowest. It is anticipated that both these prices will be advanced materially about the first of the year. The brick men say that such a step is imperative if they are to remain in business. Face brick is fairly high but there is very little demand for it. Now that the Federal Trade Commission is investigating the price of fire brick thruout the United States, the California manufacturers are hoping that the advance which is necessary will have Federal sanction. The object of the investigation is not plain to the industry, but it is supposed to be for the purpose of protecting Government work from excessive charges. The demand for brick is much better in the interior of the state, especially in the smaller cities, than it is in San Francisco or other large cities.

Colorado

The Coors Porcelain Co. is to be the new name of the pottery company at Golden, Col., if the suggested amendments to the articles of incorporation are made at the next meeting of this company, which will be held on the eighteenth. It is also hoped to increase the capital stock from $50,000 to $150,000, and extend the operations to the city and county of Denver, the state of Colorado, and other states of the union.

Georgia

The Kentucky-Southern Refractories Co., of which Jas. B. Hammond, of Bolivar, Pa., is president, acquired a brick plant in West Rome, Ga., which it will enlarge and equip to manufacture ornamental and other kinds of brick. Silica used in the manufacture of silica brick will also be produced.

Illinois

Fire of unknown origin recently destroyed the shaft and fan house at the Streator (Ill.) Clay Manufacturing Co.'s plant. The flames were discovered in their incipiency and were confined to the fan house. The loss is estimated at $2,000.

Articles of incorporation have been filed by the Malinite Co., of Illinois, which was formed in Belleville to manufacture and sell all kinds of clay products. The company has a capital stock of $25,000 and the incorporators are William B. Ittner, Warren W. Ittner, and Sam B. Jeffries.

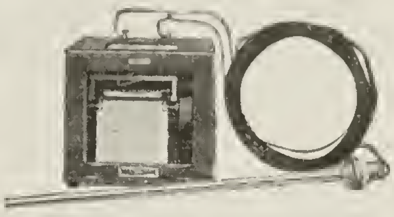
S. M. Johnson, of Normal, Ill., in drilling a well on the Matt Richardson farm two miles northeast of Ellisworth, found at a depth of fifteen feet from the surface a clay that by all appearance is said to be a potter's clay. It is of gray

Tycos

TEMPERATURE INSTRUMENTS

Indicating Recording Controlling

Mercurial, Recording and Index Thermometers for all industrial and laboratory applications.
Electric Contact Thermometers.
Temperature, Pressure and Time Regulators.
Mercury Column Vacuum Pressure and U Gauges.
Base Metal, Rare Metal and Radiation Pyrometers.
Fery Radiation Pyrometers.
Hygrometers.
Hydrometers.
Mineral Oil Testing Instruments.
Aneroid Barometers.
Mercurial Barometers.
Recording Barometers.
Pocket Compasses.
Surveying Compasses.
Rain Gauges.
Anemometers.
Air Meters.
Thermographs.
Hand Levels.
Aviation Barometers.
Inclinometers.
Sphygmomanometers.
Fever Thermometers.
Urinary Glassware.
Thermometers of all kinds for home and general use.


Tycos RECORDING PYROMETER

Tycos Pyrometers are a necessity in every industry involving the application of high temperatures.

Just write for our catalogue describing these efficient *Taylor* aids.

Taylor Instrument Companies
ROCHESTER, N. Y. 67

Why Don't You Make Flower Pots

It's a big field with very little competition, and it makes a profitable side line for any plant making brick or tile products.

Start right by adopting the

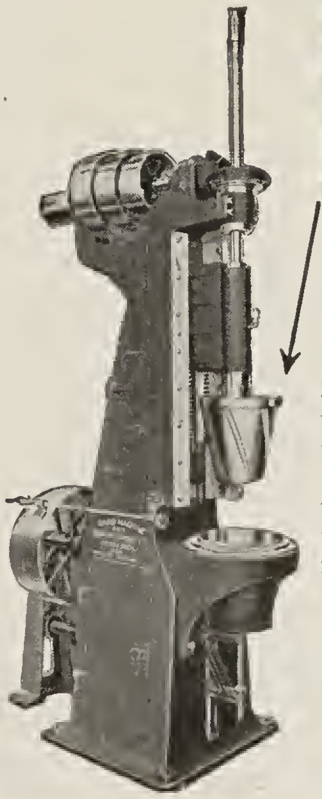
Baird

Flower Pot Machine

Simple in operation, accurate in its work, and from six to ten times as rapid as old methods.

Send us a sample of your clay—we'll show you what our machine will do for you, and send you full information.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.



Brickyard Bill Says:

"No matter how gloomy you're feeling, you'll find that a smile is most healing, if it grows in a wreath around the front teeth, thus preventing the face from congealing."

The Standard Drier

makes brick manufacturers smile and keep a-smiling. Because of the way it dries their product through and through, without checking or cracking. Means more and more dollars to meet that old payroll and buy Liberty Bonds with.

Don't matter what the nature of the clay is, either. The Standard Heating Apparatus is designed for flexibility. The piping is in each instance so arranged as to perfectly meet the requirements of the clay and steam conditions.

Ask users about The Standard Drier. We'll send you a list of them, with our catalog for the asking. No obligation whatever. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

Gold Medal Award

Panama-Pacific Exposition
for

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Their Merits are Vouched for by
Hundreds of Satisfied Users
Ask for our New General Catalog No.8

THWING INSTRUMENT CO.
3336 Lancaster Ave. - Philadelphia, Pa.

color and much like putty. It is said to lie next to a yellow clay. No potter's clay is supposed to be in this region.

Indiana

Seven Hoosier members of the American Face Brick Association petitioned the Public Service Commission recently to do something to harmonize alleged discriminatory brick tariffs charged by interstate carriers. The petition was from the Acme Brick Co., of Cayuga, the Veedersburg Brick Co., the Crawfordsville Shale Brick Co., the Polston Paving Brick Co., and the Standard Brick Co., of Crawfordsville, the Brazil Clay Co., and Hydraulic-Press Brick Co., of Brazil.

Kentucky

Fire recently caused a damage estimated at $2,000 to the plant of the Maysville (Ky.) Brick Co.

The Coral Ridge Clay Products Co., of Louisville, has recently received some important hollow tile orders and the company is booked ahead for two months' steady operations.

Building operations on at Glasgow, Ky., total $100,000. The new Murrell Hotel and the government building total $75,000, and there are several new residences under way. Glasgow has been the scene of several severe fires in the last several years.

At this time the car supply and the coal supply are fairly satisfactory. Coal can generally be had, altho there is no bargain market any more, and cars are more plentiful than used to be the case. The Louisville trade is very apprehensive, however, as to what will happen when the prospective order as to curtailment of transportation on the so-called non-essentials is promulgated.

At the annual meeting of the Fire Underwriters' Association of Kentucky, held on November 27, at The Seelbach Hotel, in Louisville, the Executive Committee of the organization was directed to appoint a committee which is to carry on a campaign against shingle roofs. The committee will have district committeemen in sections into which the state is to be divided and efforts will be made to induce city councils, commissions and trustees to enact restrictive ordinances against shingle roofs and requiring that fire-resistive or non-combustible roofing materials be used. Milton C. Miller is secretary of the association, Starks Building, Louisville, Ky.

Louisville's biggest single brick order of the year has recently been placed and deliveries are now being made on it. This was for 2,500,000 common brick for construction of warehouses for the annex which is being constructed at the United States Quartermaster's Depot in Jeffersonville, Ind. The order was divided among four Louisville companies, the Coral Ridge Clay Products Co., and the Southern Brick & Tile Co. are the manufacturers, while the Tyler Building Supply Co. and the R. B. Tyler Co. have additional orders. The outside walls and the partition walls will all be thirteen inches wide, of brick construction, and the building is in accord with recommendations of the fire insurance authorities for buildings of its class. Some coping for the tops of the walls will be supplied by the Bannon Pipe Co., of Louisville. Loomis & Hartman, Louisville architects, drew the plans.

Brick and tile manufacturers and dealers of Louisville, Ky., note a considerable improvement in business. Some of the plants which have been nearing the end of their business booked ahead have been able to make considerable extensions of operating periods and the managements are getting to the point where they are beginning to think that they can keep going all thru the season. It is remarked in several places that the demand is coming from people ordinarily not much in the market for building materials. The well-to-do, who ordinarily are the leading buyers of brick, tile, etc., and who ordinarily are builders, have been driven to conservatism by increasing costs, taxes, and in many cases by diminution of incomes and extra demands in the way of Liberty Loan bonds, etc. On the other hand, many of the working class are making much more money than they ever have made before and they are spending it. In cases where they own their own homes, as is frequent, these people are spending their new-found money in improvements which, tho usually small, in the aggregate make up a large amount of business.

Michigan

The Jeffrey-DeWitt Co., Detroit, Mich., is planning for the construction of a plant for the manufacture of high-tension suspension-type disc insulators. The estimated cost of the proposed works is $100,000.

The Dresden Brick Co., of Detroit, is successfully introducing a glazed brick manufactured at Huntington, W. Va., according to Ralph Spencer, president of the company. Altho the product is new in Michigan, it has met with considerable favor for sanitary interiors.

Sales of common brick in Detroit, Mich., have dropped about 50 per cent. in the last 60 days according to John S. Haggerty, Detroit manufacturer. Mr. Haggerty's plant is now running about half time and he expects to shut down altogether within two months. He looks for a decided pick-up in the spring.

There is still a shortage of coal in Detroit, and brick manufacturers report that they are virtually working on a hand to mouth basis. George H. Clippert, of George H. Clippert & Brother, reports that his firm is just able to secure enough fuel to keep running at half capacity. The slowing up of business somewhat offsets the shortage of coal, however, according to Mr. Clippert.

Missouri

Common brick, which has been on the increase in Kansas City, reached its highest level and has remained stationary at $11.50 per thousand. Brick manufacturers and dealers report that it is likely that the price will remain close to this figure the remainder of the season, unless the coal problem again becomes so acute that an additional increase is necessary.

H. H. Crowell, sales manager of the Hydraulic-Press Brick Co., at Kansas City, Mo., reports that the past week has been one of the best that he has had for some time. The business, he declares, seems to be increasing nicely and the prospects of maintaining a fair trade during the coming winter months are extremely good considering all the conditions that now affect the market.

The Western Paving Brick Manufacturers' Association reports that its plants are now operating close to capacity and that there has been little difficulty encountered in maintaining a maximum production, excepting for the car shortage. The coal situation in the state of Kansas where several of the association's plants are located, is

Marion

Steam Shovels, Dredges, Draglines and Kindred Machinery

IN digging material for making Bessemer Paving Brick, the Bessemer Limestone Company of Youngstown, Ohio, lean heavily upon Marion Shovels — for "Marions" have been for years under severe test in this Company's various plants, and have proved themselves worthy.

In their Bessemer, Pennsylvania, Plant, a combination of hard-to-handle materials is being satisfactorily taken out by Marion Shovels—

COAL, FIRE CLAY, SHALE AND LIMESTONE; ALL HANDLED PROFITABLY BY "MARIONS"

You'll like Marion Shovels—nearly everybody does—for the prompt way in which they respond to sudden increased demands for more speed and greater capacity. We'll gladly furnish particulars if you write about your work—no obligation to you.

The Marion Steam Shovel Company, Marion, Ohio

Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle

219 ESTABLISHED 1884

"SHIP US ANOTHER"—

That is the message we are receiving daily from those who are using the

Union Steel Rivetless Chain Belting

A letter came in a few days ago from an Indiana Clay Products manufacturer—the largest of its kind—and this is what he said:

> "We are attaching hereto order for 80 feet of chain, the same as you shipped on our order of January 16. We wish to advise that this chain is wearing very satisfactorily, and we trust that you will take every care to turn out the same size and quality as that shipped on our previous order."

This is only one of many clay products manufacturers who have learned that they can reduce operating costs by using this chain, because it outwears several ordinary chains, and gives TROUBLE-PROOF SERVICE always. It has large Glass-Hard, Reversible Bearings, and fits any Standard Sprocket.

Send for catalog illustrating Chains, Sprockets, Buckets, Elevators, etc.

Union Chain & Mfg. Co., Seville, Ohio

Clay Products Manufacturers Are Using

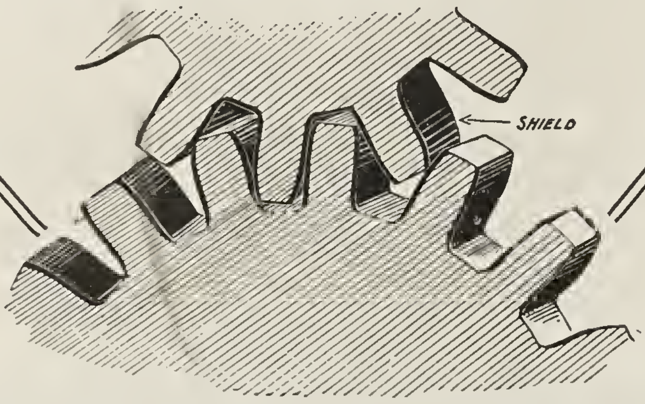
Rino Gear Shield

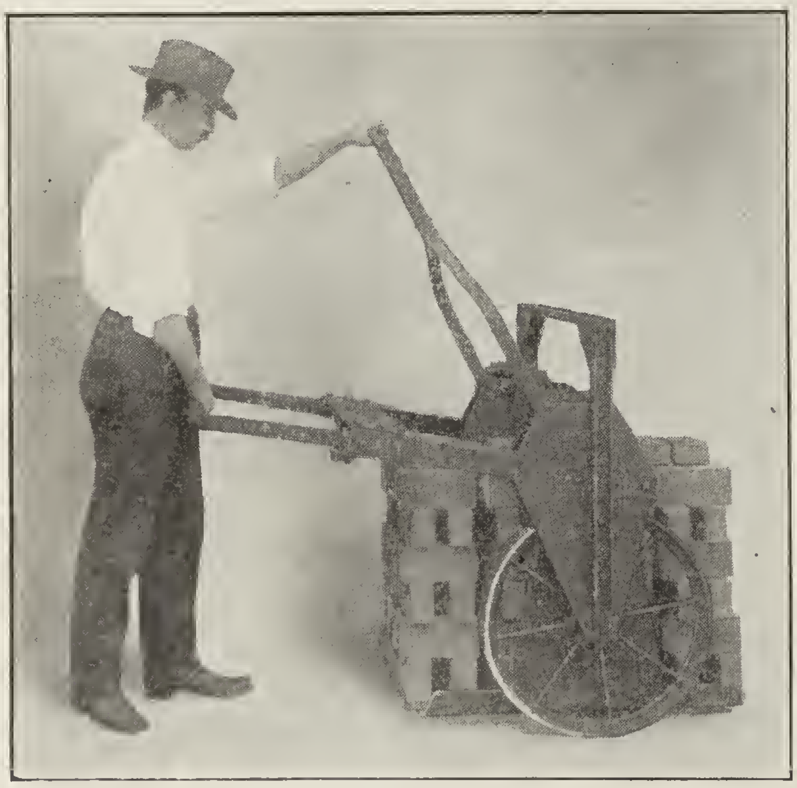
WHY?

Because it is a lubricant compounded especially for use on brick plant machinery, steam shovels, etc. It is guaranteed to give perfect lubrication—plus prolonged life—to gearing and pinions, less noise in operation, and general all-around satisfaction.

Write for a sample to try—no charge — no obligation.

The Ohio Filler & Shield Co.
Columbus, Ohio
We also make a Wire Rope Lubricant and a very fine Roof Shield. Ask us.





No. 5 Drymore Truck
The loaded pallet is picked up from and deposited upon the ground or floor.
No pallet supports; no rails; no transfer cars; no turntables.

ONE MAN HANDLES YOUR OUTPUT

Perfect brick because not handled individually after leaving the Cutter or Repress.
Also used in connection with the No. 5 Drymore Dryer—an inexpensive and efficient artificial dryer for the smaller plant.

Drymore—
FOR LESS
The Drymore System Galion, O.

still somewhat serious, but relief from this condition is materializing faster than it is in the car shortage.

Permits recently issued for brick building at Kansas City have been greatly in excess of those issued during the first weeks of the fall and winter season. This has brought a better trade on the market here and it seems that there will be a better pace set and maintained in building during the remainder of the winter season. This is in a large measure due to the efforts of the local real estate board in stimulating interest in building.

As a shipper of 50,000 car loads of commodities per year, Walter S. Dickey, of Kansas City, Mo., believes that the railroads should be given an immediate and material increase in freight rates. Mr. Dickey is the owner of twenty-one clay plants located in ten different states and is a large shipper of raw materials and coal, and a correspondingly large employer of labor. His experience in the handling of commodities at congested terminals and his difficulties in getting cars, together with the present depreciated value of railroad stocks, convinces him that the request for freight rate increases is a meritorious one and that, for the good of the business of the country, favorable action should not be delayed.

Brick business at Kansas City, Mo., during the past two weeks has been a bit better than it has at any time during the fall and winter season. Most of the plants in this territory are operating almost to capacity again, since the coal shortage has been largely overcome. Many of the concerns have succeeded in securing new contracts for coal that are fairly satisfactory and which guarantee a surplus supply for the manufacturers. The greatest difficulty that the brick and other clay products manufacturers are now having in this territory is securing cars for shipping. Most all of the concerns doing business here declare that the car shortage is becoming more and more serious each week.

New Jersey

The Matawan Brick Co., Matawan, N. J., has filed articles of authorization with a capital of $25,000 to operate in New York. C. R. Robinson, 17 Battery Place, New York City, is the representative.

Emil Paskervitch, of Hackensack, N. J., a dealer in brick and other burned clay products, has taken some small orders of late, the aggregate of which makes a reasonably respectable amount. He says, however, that his trade is not what it ought to be and that he finds it rather difficult to maintain his volume of sales. He makes his deliveries by motor truck, his five-ton running truck enabling him to market brick and such other burned clay material as he sells in nearby towns. This is an attractive inducement to the buyer because of the difficulty of obtaining freight cars; few buyers are certain that their shipments will arrive after the orders are placed, when those shipments are made by rail. The motor solves the problem and Mr. Paskervitch delivers his brick without waiting for the railroads to supply him with cars.

Newark, N. J., estimates that it must make provisions for an increase in its population of approximately 75,000 persons within the next few months. The great plants now in process of construction at Port Newark will draw an immense number of workers and their families to the city. Today it hasn't a vacant apartment to offer any seeker for a reasonably good home at a moderate rental, located convenient to his work. So acute has the situation become that the city authorities have taken the matter in hand and intend directing the planning and erection of a series of modern community or multiple family apartments, and providing the best homes available at the price. Good sites are to be selected and fireproof construction to be enforced. All thru the Newark region much new housing must be provided for the thousands of additional employes who will be required in the operation of the great plants now in process of erection. Work upon these new houses will undoubtedly begin in the spring.

Not much improvement is reported in the building situation in the Paterson, N. J., district this month. Building permits in Paterson are the lowest they have been in two years and from the present outlook, it is futile to expect any improvement—it is too late in the season to start new operations. Architects and others say that very little increase in consultations respecting new construction for spring is heard. Sellers of building material have done a fair business during the month, but it was largely required in finishing buildings already under construction, or else in additions and changes made necessary by developments or shifting in enterprises housed in certain structures. However, Paterson is likely to have one or more new school houses next year, tho the matter is not yet decided. Dwellings will be needed and, above all, some means of housing the growing population drawn here by the opening of a number of new factories. Some estimate the probable increase in population as approximately 7,500 which must be cared for in a city already crowded and without adequate means of quietly increasing its housing facilities.

In the suburban communities much the same conditions prevail. Passaic, a city of about 100,000 population seven miles away, is in worse condition than Paterson, but no investor is making arrangements to construct new dwellings, with the possible exception of one or two apartments of varying sizes. In Hackensack, not a manufacturing town, by the way, considerable dwelling construction is projected for the coming season, but nothing further will be done this fall. In Ridgewood, another residence town, the outlook is about the same. Rutherford will require more dwellings. Englewood is planning upon the erection of several expensive dwellings early in the spring. Dumont and Bergenfield, where the cantonment is located, will erect a great many new structures in the spring. An increased population approximating 25,000 has been thrust upon these communities by the war activities of the government.

The shipping situation all over New Jersey is bad; and the nearer business is located to New York the worse conditions become. Freight is so congested at the New York terminals that it is impossible to get a car thru inside of ten days to two weeks. All sorts of suggestions are made to secure relief; and railroad men appreciate the fact that relief must be obtained before snow comes, or it will be impossible to straighten out the tangle this winter. Therefore, all passenger travel is to be curtailed and as many more trains taken off the roads centering in New York as possible. The Pennsylvania has offered to abandon every one of its thru passenger trains and devote its released equipment and men to moving freight. Other suggestions are that certain roads centering about New York be used for different classes of freight and that all terminals be used in common as long as the war lasts. The real effect of all this congestion and difficulty is that it is almost impossible to get a car of burned clay thru New York, or to any destination where the New York situation exerts an influence. Therefore, brickmakers and others are well pleased that cold weather is here and the plants are shut down for the season. They won't have to worry any longer about their customers getting brick.

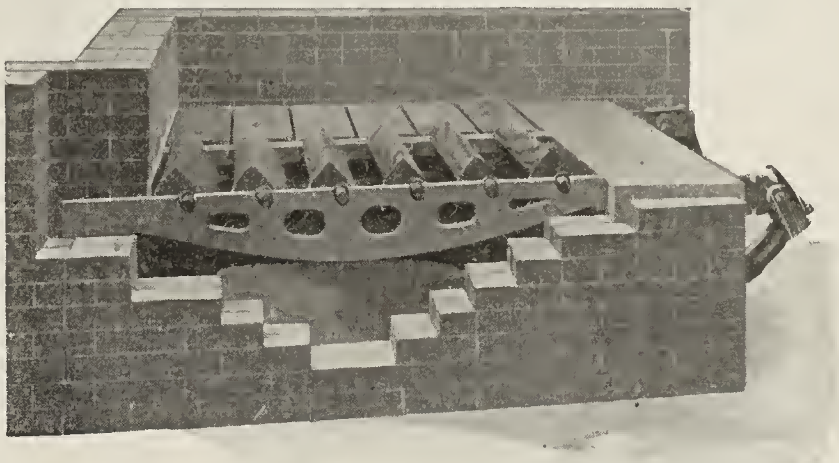
10% of Your Coal Bill SAVED

GUARANTEED

It may reach 20, 30—even 50% saving—it has in some cases, but we guarantee on 90 days' trial 10% saving

Write today and find out what a big amount these grates will save for you

Cyclone Grate Bar Company
BUFFALO, N. Y.



Duplex 4-Wheel Drive
The Winter Motor Truck

Built for year-'round service. Duplex trucks are hauling capacity loads over snow-banked, ice-covered highways during the months when many rear-wheel drive trucks are stored for the winter.

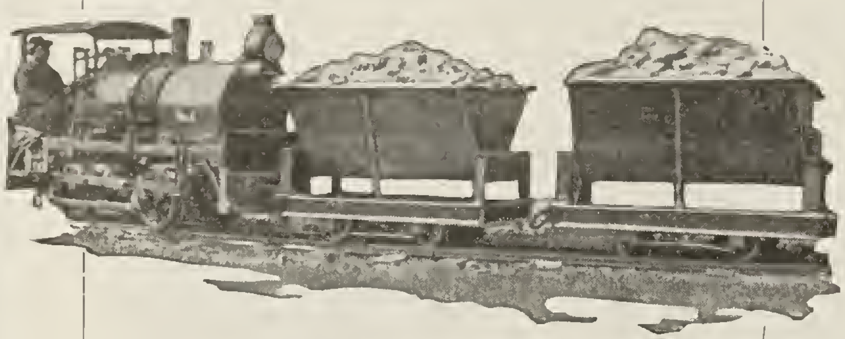
Duplex trucks are built especially for brick manufacturers and contractors, and are giving dependable, never-faltering service 12 months of every year. Write for our catalog and the heavy haulers' magazine, "Duplex Doings." Address communications to Dept. 128.

Duplex Truck Company
Lansing, Michigan

The Hard Pulling, Low Cost

Bell Steam Locomotive

Requires no licensed engineer as it is simple and easy to operate, and it burns a low-priced kerosene oil.



Your efforts will be reduced, your haulage problem will be simplified, your labor requirements lessened—all at a lower operating cost. If you do not understand thoroly, ask us for explanation. Now.

Bell Locomotive Works, Inc.
30 Church Street New York

You can get a higher price for your brick if you guarantee it will be

Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H. —the dependable brand.

Write for circular and prices.

The Roessler & Hasslacher Chemical Company
100 William St. New York

Chicago, Ill. St. Louis, Mo. Philadelphia, Pa.
Cincinnati, O. Kansas City, Mo. Boston, Mass.
Cleveland, O. San Francisco, Cal. New Orleans, La.

We carry a complete line of high grade chemicals for the clay industry

New York

Manufacturing activity in New York state for October shows a marked improvement over the figures for the preceding month. There were two per cent. more people employed during the month and an aggregate increase of five per cent. in wages paid to all classes of workers. The clay and glass products group paid out one and one half per cent. more wages to one per cent. fewer workers than during September. Glass was the only industry of the group where there was an increase in the number of workers, and in wages. All of the other industries in the group decreased both in wages paid and in number of workers. The most pronounced decline was in brick, tile, and pottery where a strike combined with the usual pre-winter reduction caused a loss of twelve per cent. in employes and ten per cent. in wages. As compared with the corresponding month last year, October had one per cent. more employes and fifteen per cent. more wages.

Ohio

A fire caused a damage estimated at $1,500 to the Hinde Brick and Tile Co., of Sandusky, Ohio. The lumber roof of the kiln shed caught fire and became partly destroyed. The building was 300 by 20 feet and the quick work on the part of the fire department saved it from being totally destroyed.

J. J. Shea, assistant sales manager of the Barkwill-Farr Co., Cleveland, Ohio, is advising all prospects on building projects that prices of materials and labor will not come down, and that the best thing for them to do, if they really want to build, is to get busy now. "And it is helping to close sales for our lines," says Mr. Shea.

In all about 500 to 600 brick makers have been turned loose in the Hocking Valley and other brick manufacturing sections of the Buckeye State by the closing down of a large majority of the face brick factories. These men are expected to drift to the coal mines, iron and steel plants and rubber factories, in all of which there is a great shortage of labor.

Common brick are still in fair demand in Ohio territory, due to building of factory additions. In fact, that is about the only bright spot in the brick situation in the "Buckeye State." War work is causing quite a few manufacturing plants to expand and consequently a good demand for common brick is created. Prices remain firm around $12.

The Bayfield Clay Co., Irondale, Ohio, has just resumed operations, turning out hollow tile and fire brick after a one month's shut-down, due to coal shortage. According to W. D. Bayfield, secretary and treasurer of the firm, they will continue to run full time now, provided coal and empty cars continue to arrive as they have recently.

The plant of the Union Coal and Fire Clay Co., at Dennison, Ohio, has been leased by the Alphonse Custodis Chimney Construction Co., and has been turned over to the manufacture of radical chimney blocks, made under the company's specifications for use on its own work. The operations at this plant are under the general supervision of W. P. Hoake, formerly of Buffalo.

The paving brick trade in Ohio is quite inactive, due to shortage of cars for shipping purposes. According to the Nelsonville (Ohio) Brick Co., much of the paving work, planned for the present season will have to be carried over to next year as it can not be completed this season. Paving brick plants are still in operation, however, as they do not want their organizations to get away from them.

With little doing in face brick circles in Ohio, due to lack of cars for shipping the finished product and the scarcity of coal, managers and directors of the various manufacturing companies will attend the annual meeting of the American Face Brick Manufacturers' Association, to be held at French Lick, Ind., December 12 to 14, in larger numbers than ever before. This is especially true of the Hocking Valley manufacturing district, which has been hard hit by lack of transportation facilities.

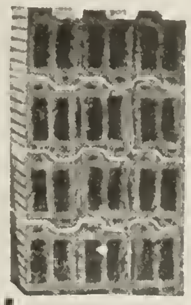
Because an insufficient amount of tar was placed between the wood blocks which were used instead of brick to pave Euclid Avenue, between East 22nd and East 40th Streets, Cleveland, Ohio, what was planned to be the only real pavement in the city has fallen to pieces. The pavement is at the most three months old. The contractors who had the job said motorists complained because tar seeped out of the wood blocks in warm weather toward the end of summer and ruined their automobile tires. Patching of a three months' old paving now is in order.

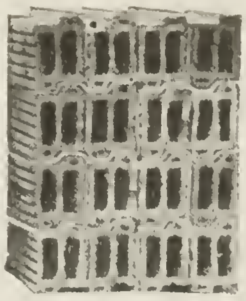
Brick manufacturers and jobbers in Ohio have been notified that the embargo placed by Judge Lovett against the use of open top cars for other uses than the transportation of coal, ore, and war necessities will not be lifted until the critical stage is over. This time is not yet in sight and consequently there is little hope for the brick industry, other than that used in government work. In fact, the result of the embargo is to effectually stop the shipping of brick for any purpose, excepting that depending on war activities. Ohio Highway Commissioner Cowen protested against the embargo and asked that it be postponed for several weeks to allow contractors to finish their work, but his prayer was not effective in securing a modification of the embargo.

The freight car situation in Ohio is getting no better, and in fact many brick shippers believe that it is worse than was the case a month ago. As a result, little or no shipping of face brick is made from any of the plants in Ohio, with the exception of two favorably located to get empty box cars. Plants thruout the Hocking Valley and in the northern part of the state have been generally closed down and will not be reopened until the situation improves. There are two angles to the car situation as it affects Ohio brick manufacturing plants; one is the inability to ship out the finished product and the other the inability to ship in coal for burning and power purposes. Makers of fire brick which are used on government work are also getting plenty of cars.

Building operations in Columbus, which have shown a falling off of approximately 50 per cent. during the past few months, are again coming to the fore, according to the records of the Columbus building department. Building permits issued during the past week show a return to something like normal figures for the time of the year. The Jeffrey Manufacturing Co. has taken out a permit for the erection of a large addition and quite a few flat buildings and apartments are in project. Revised plans for a $50,000 creamery for the Blue Valley Creamery Co. have been completed and bids on the work have been invited. Revised plans for a large garage to be erected by Max H. Rieser at Third and Main streets are on file at the Builders' and Traders' Exchange.

The publicity committee in charge of the Real Estate and Building Show to be held in Columbus, Ohio, January 21 to 30, inclusive, is carrying on its work vigorously and already much enthusiasm has been worked up. In view of the slackness in building operations, it is believed that much of the discussion of the allied organizations which will hold their conventions in Columbus during the show, will be taken up





You Can Forget Competition

if you are quick enough to get the license for manufacturing, in your territory,

"LOXALL"

A Better Hollow Block

Those who are making this block never have to worry about what the other fellow may charge for his block. The "Loxall" is quickly accepted in place of any other by the architect, the builder, and the mason.

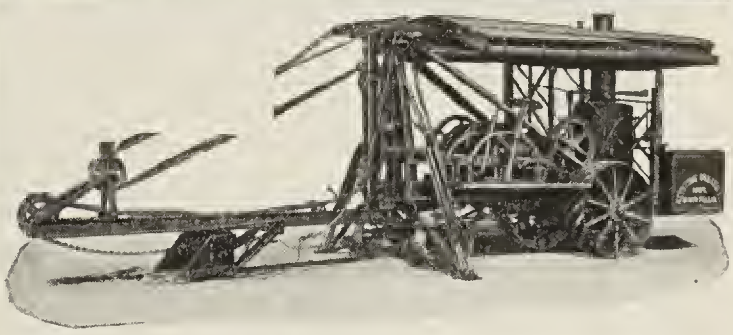
The interlocking lugs dovetail perfectly—the joints are easy to spread. It is a perfect insulator too.

Write for territorial assignment contract.

J. E. EXNER
602 Lincoln Street, Coffeyville, Kansas

Patented in the United States and Canada

KEYSTONE



Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards ly and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Joplin, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

The Analogy Between Fire and Water, Scum and Rollin's Barium Carbonate

IS PERFECT

Rollin's Barium Carbonate eliminates and smothers the scum just as effectively as fire is smothered by water.

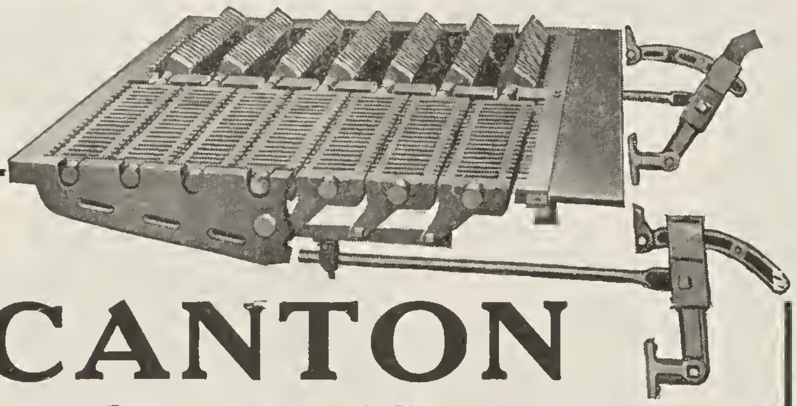
Add "Rollin's" at the pug mill feeder; it renders insoluble and harmless the scum-producing sulphates that are in your clay.

If you are bothered with scum on your ware, either in the drying or burning process, or after it is layed up in the wall—you particularly should use

Rollin's Barium Carbonate

Rollin Chemical Company
Inc.
Charleston, West Virginia

General Sales Agents
National Aniline & Chemical Company
244 Madison Ave., New York City



CANTON
Shaking and Dumping
GRATES

Not a TRIAL Nor An EXPERIMENT

When it comes to saving fuel, keeping the fires clean, removing clinkers and ashes easily, these grates have proved their practical utility for many years.

The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

When you want Grates—don't forget to investigate the merits of the Canton Boiler Grate. Write for catalog.

THE CANTON GRATE CO.
1706 Woodland Ave.
CANTON - - - - OHIO

in devising some means to keep their industries going. In fact, it is confidently believed that the attendance at the show will be larger than at first expected. Brick manufacturing concerns have arranged to have exhibits and also to bring visitors to their permanent exhibits in their offices. On the whole, the brick manufacturers and dealers are looking forward to the show and attending meetings with more than ordinary interest.

Columbus (Ohio) manufacturers, contractors, and builders have been asked by officials of the National Organization of Employers' Associations to prepare at once a list of all employes who have been called into the national army or who are about to be called. They want a detailed description of each skilled employe, showing what work he is best suited to perform, also the military unit to which he has been assigned and the location of the camp where he may be reached. National employers' officials say an aggressive movement on their part is necessary if skilled workmen of the country are to be used in most effective places, to assist in winning the war. These officials say they are not seeking to keep skilled men out of the army or navy but that along the line of efficiency they are gathering the information which will assist officers of the army and navy to place men to best advantage. Columbus employers were asked to state particularly those men who might be available for use in government arsenals and in munition factories, since there is a concerted movement on foot to speed up manufacture of arms and munitions.

Ontario

The bondholders of the Ontario (Can.) National Brick Co. are being asked to take part in a plan of reorganization of that company. The new plan provides for the raising of $400,000 additional money, an amount equivalent to 25 per cent. of their original bond holdings. If this scheme goes thru and the old company now in liquidation is brought in on behalf of the bond holders the new company will have an authorized bond issue of $500,000, of which $400,000 will be issued immediately. Bond holders who subscribe to the agreement and take their proportion of the new bonds, that is, pay in $250 for every $1,000 bond of the old company, will receive in addition $1,000 of the common stock. The $400,000 to be raised will provide for the outstanding secured liabilities, cost of insurance and maintenance during sixteen months, and the necessary working capital to commence operations.

Pennsylvania

The Reading Fire Brick Co. has awarded a contract for the construction of a new one-story addition to its plant, about 60 x 100 feet, to provide for increased capacity.

The Big Level Land & Clay Co., Mount Jewett, Pa., has been incorporated with a nominal capital of $5,000 to operate a local plant. H. T. Mann, of Milsburg, heads the company.

The brick plant at Speeceville, Pa., suffered a loss of two roofs over their kilns, which were destroyed by a fire which occurred at this plant a short time ago. The watchman discovered the fire in time to give alarm and form a bucket brigade which saved the other four kiln roofs on the plant.

The Montgomery Shale Brick Co. is installing a kiln at its plant at Westpoint, Pa., where it expects to manufacture 50,000 common brick a day and if present plans are followed it will confine its efforts to making only vitrified sewer brick. This company is furnishing the brick for constructional work

being done on Pety's Island by the Crewe-Levick Refining Co.

John F. Brady, a brick dealer of Philadelphia, is furnishing brick to the American International Shipping Co., on Hog Island. He is also the fortunate bidder for the brick required by the United States Shipping Board and the Trayler Engineering Co., at Cornwells, Pa. He has other important contracts under way, but these are some of the largest he has received recently.

Perhaps the feeling that the coming season is unpromising for the brick interests in Philadelphia is too gloomy. Many new factories and at least three new shipyards are in course of construction and when the work is finished these factories and yards must be filled with employes. They must live somewhere—and new houses are necessary. The brick interests may therefore find a rift in the gloom clouds when those houses start to materialize.

A housing committee has canvassed the towns of Allentown, Bethlehem, Easton, Quakertown, Slatington, Nazareth, and every other place within thirty miles from the Bethlehem Steel Plant, for the purpose of finding housing facilities for the eight thousand men that will receive employment at the plant in addition to the present working force. At Allentown, a special committee has been organized to start a building boom for workingmen's homes.

Fire, believed to have been incendiary, caused a damage of $8,000 to the brick yards at Bingen, Pa. Sections of the rack dyer were torn away by the workmen to prevent the spreading of the flames, which destroyed the boiler house and machinery, sand houses, and half of the dryer sheds. The plant will be entirely reconstructed at once. Thirty men were employed and the daily capacity is 30,000 brick. All of the buildings were of frame and the fire traveled from one to the other building very rapidly.

Wilson M. Dumn, of Reading, who owns a farm at Fleetwood, Berks county, Pa., has given a lease for the digging of clay to the J. Lawrence Grogan Co., of Philadelphia. The firm has sunk a 75-foot shaft thru a solid clay bank, believed to be 50 feet deep, 600 feet long, and 200 feet wide. Work was started six weeks ago on the deposit of fire clay and machinery is now being installed to prepare the clay for market. On the same tract there is a fine deposit of silica sand, which is being quarried and sold to the rolling mills.

Confronted with a serious housing problem, the business men of Williamsport, Pa., organized a corporation and disposed of stock worth a half million dollars, for the purpose of erecting a community of homes on a tract of land adjacent to the city. A contracting firm started work on the first thirty homes, which are to be ready early in 1918. The workmen will be given an equal opportunity to rent or purchase, regardless of their weekly wages. The houses are to be sold at $1,800 to $2,500. There will be a lighting, plumbing, and sewerage system for each home. If the plans work out, another half million dollars will be added for the venture.

Complaint is heard in Philadelphia, Pa., that business is more or less quiet and shows little promise of improvement. Only 1,500 new dwellings have been erected this year, compared with an average of 6,000 or more in ordinary years, and with a total of 10,000 in record years. Obviously the brick manufacturer has suffered along with others in this tremendous reduction in new construction; under present conditions the outlook is rather unpromising. It might be

Erie Revolving Shovels

"You couldn't make the Erie any better"

"Our Erie is doing well against all kinds of digging, hard and soft. I have had lots of shovel experience, and I do not see how you could make the Erie any better!" R. T. Kyle, Supt. Huntington Clay Products Co., Barboursville, W. Va.

That's just what you hear from every brickyard man who has had plenty of steam shovel experience. The Erie is built with EXTRA STRENGTH. It operates with practically no repair expense, in the hardest brickyard digging. It gives a much bigger output than any other 20-ton shovel ever built—and has a longer, higher reach.

Prove these facts for yourself. Find out which is the best revolving shovel on the market. We would like to send you our Bulletin "B."

Ball Engine Co., Erie, Pa.

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

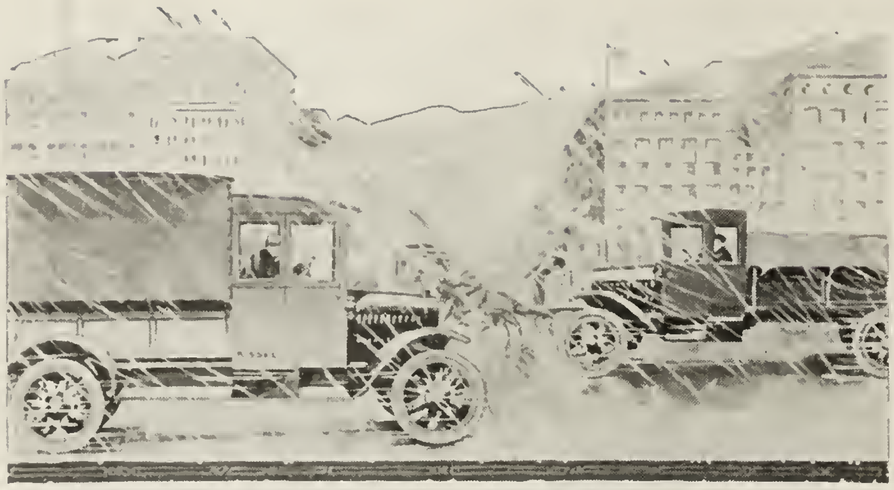
The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.

Cleveland, Ohio

Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.



Don't Risk Costly Lay-Ups or Delayed Schedules This Winter

The ALL-YEAR Cab gives drivers in the brick and clay industry full protection during cold, rainy or stormy weather—increasing their efficiency and decreasing the possibility of accidents.

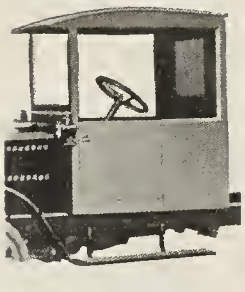
In winter the ALL-YEAR Cab is entirely closed—warm and dry in stormy and cold weather—giving drivers complete protection and increased results for you. In summer, it becomes a cool, open housing by removing the winter attachments.

KISSEL TRUCKS

Five New Sizes—A Truck for Every Purpose—

The exclusive Kissel combination of perfected worm drive rear axle—superior front axle—sturdy Kissel-built power-plant — reliable brakes — dependable springs and special heat-treated frame—insures continuous service at low operating cost.

Kissel ALL-YEAR Cab



Open for Summer

Gives drivers a cool, open, shady housing. Rain curtains are provided for sudden showers.

Never before in the history of American business has the necessity for uninterrupted haulage and delivery schedules become such a national necessity. Kissel Trucks with the ALL-YEAR Cab insure continuous service all year round.

Closed for Winter

The winter attachments turn the open cab into a warm, dry, and leak-proof cab.

Investigate Kissel Trucks and the new ALL-YEAR Cab. Send for literature

Kissel Motor Car Company

Hartford, Wisconsin U. S. A.

mentioned in this connection, however, that in the erection of large numbers of small houses together, Philadelphia builders have in some degree solved the housing problem for cities situated as Philadelphia is. Probably Chicago or New York could not do the same, but Philadelphia can, and does. But even the finishing of three or four of these operations, of greater or less size, has not given the city the number of new dwellings commonly erected.

Tennessee

The Eagleville (Tenn.) Brick & Tile Co. has been incorporated with a capital stock of $10,000, by J. E. Jackson, William Ralston, L. H. Lovelace and others.

The Johnson-Porter Clay Co., of McKenzie, Tenn., is developing deposits of clay and will mine pottery clays, the production to reach a volume of 1,000 cubic yards a day. The company has been considering letting a contract to remove the overburden which is fifteen to forty feet thick.

West Virginia

The main building, all the equipment and machinery, and a quantity of manufactured brick were completely destroyed by fire recently on the South Ruffner plant of the Kanawha Brick Co., Charleston, W. Va. It is estimated that the damage amounts from $25,000 to $30,000. The plant was uninsured. It is not definitely known just where or how the blaze started but it is believed to have originated in the front end of a boiler.

The entire output of the Kenilworth (W. Va.) plant of the Globe Brick Co., of East Liverpool, Ohio, is given up at present to fire brick, the manufacture if paving brick having been abandoned. Small orders on paving block are filled out of stock. Coal is coming a bit more regular, as are cars, but embargoes to eastern points impede shipments to those and northeastern points. These embargoes, however, do not affect the shipment of fire brick which, by priority rulings, enjoys rapid transportation.

* * *

POTTERY NOTES

A Resume of the Activities of
the Potters and Some Mention
of Their Plans for the Future

The Pottery Situation

Following the settlement of the strike of two weeks in the domestic pottery trade, the manufacturers are now confronted with the labor shortage proposition. This situation has caused the production of all plants to be kept below normal, the eastern Ohio pottery district working from 60 to 75 per cent. of capacity. The volume of unfilled orders on the books of the pottery manufacturers is as heavy as ever, but there has been a slight decrease in the receipt of new business. However, there is a sufficient amount of business on the files of all pottery manufacturers, both those manufacturing vitreous china hotel and dinner ware and semi-porcelain ware to permit all potteries to be operated to the limit of capacity for many months to come. The shortage of help and the known attitude of many pottery workers to work only when they feel like it, is causing an uneasy condition within the trade.

Constant increase in the price of raw materials and with the increased wages the pottery manufacturers are now paying has caused the manufacturers of all lines of pottery to advance their selling lists, the advance being not less than ten per cent. in any instance. Buyers have not objected to paying for merchandise if they could but get it, and at this point the transportation problem enters.

Shortage of cars for carlot shipments, embargoes on both carlot and less than carlot shipments is a matter that is exceedingly hard to overcome, and over which the pottery manufacturers have no control. Hardly a day passes but that new embargoes are announced by the initial carriers.

Concerning fuel, the pottery manufacturers are also confronted with a problem that is hard to fathom. The gas companies supplying the potteries in Western Pennsylvania, West Virginia, and Eastern Ohio have notified the pottery manufacturers that they will not guarantee any gas for industrial purposes on or after January 1. At this early date the shortage has been noticeable, and in several instances, when weather has been slightly cool, the supply has been shut off from the potteries in the East Liverpool, Ohio, district. It is hard to obtain coal, and while some of the Eastern Ohio pottery manufacturers have started to arrange their kilns for coal burning, many have no assurance that they can secure required quantities of coal on regular shipments. The readjustment of the coal scale at the mines may have some effect upon the situation, but the demand for coal is such that the pottery manufacturers are practically without a visible coal supply for the coming winter season. The car supply also enters into this situation, no matter what the pottery manufacturers have to pay for coal.

* * *

Pottery Notes From Here and There

The American Dressler Tunnel Kiln Co. has started the construction of three tunnel kilns at the plant of the Limoges China Co., at Sebring, Ohio. These kilns are the first of this character that have ever been used by a domestic pottery concern, altho the kiln has been in successful operation for over a year at the plant of the New Castle (Pa.) Sanitary Pottery Co.'s plant. The buildings housing the kilns will each measure 100 feet wide by 350 feet in length. The results obtained from them will be closely watched by every semi-porcelain pottery manufacturer, and if the success of the kiln is proven for general ware, the manufacturers will then order similar kilns built at all plants. The problem of a shortage of kilnmen will then be eliminated, as will also the trouble of securing a sufficient number of kiln drawers. The scarcity of kiln labor is practically compelling the pottery manufacturers to seek all mechanical devices possible in the operation of plants.

The potteries in Trenton are suffering from lack of coal. While it is not yet reported that any have been obliged to suspend operations, it is true that they are finding it necessary to cut their use of fuel in every way they can devise. The situation has grown much worse during the past week or so and some are about down to the bottom of their bins. Meanwhile they are looking for aid from the government, since most potteries have more or less government work in hand, and it is essential they should get it out. All Trenton potteries have been busy with government work in some degree and most of them have more to do, tho it is probably

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.

**400 Chestnut Street
Philadelphia, Pa.**

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part I, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.20
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.50
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scumming and Efflorescence	.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, **Book Department,**

Brick and Clay Record
610 Federal Street, Chicago, Ill.

true that the rush of the work for supplying the cantonments is over.

All general ware pottery manufacturers are in hopes that the industry will not be classed by the government as a "non-essential" and that plants will be permitted to operate to the fullest capacity possible. There is no doubt but that the government is going to keep a close watch on manufacturing activities, and it is generally believed that the pottery industry will be looked upon as a necessity instead of a luxury. The shortage of ware in the country now is the greatest ever known. Jobbers and other buyers have been unable to supply their trade, or obtain supplies from the manufacturers. With the embargo on eastern and southern shipments now, it will be very hard to get merchandise thru for the holiday trade.

The new selling price list for domestic pottery recently put into effect has been considered as very equitable by buyers. The advance in the list was occasioned by the recent advances made to pottery labor, the advances following a two weeks strike in the trade. In the meantime, however, there have been advances in raw materials and ceramic chemicals. However, English ware has been advanced considerably, and reports are heard here that French manufacturers have also advanced their lists. These selling lists are expected to remain permanent, and that no more increases will be authorized. However, orders for 1918 delivery are being booked "at price prevailing at time of shipment."

As a penalty, and according to the prominence of the parts they took, a number of members of the National Brotherhood of Operative Potters have been fined sums ranging from $25 to $500 for their plans to disrupt the Brotherhood. These insurgent pottery workers were the cause of the recent pottery strike being prolonged a week. These fines were levied by the Executive Board of the National Brotherhood of Operative Potters. This labor organization, following the payment of $10 strike benefits to those pottery workers entitled to receive them, bought $20,000 worth of the second issue of Liberty bonds.

The pottery industry of Trenton is seriously menaced by a shortage of fuel and certain kinds of imported clay necessary to the production of a satisfactory body in sanitary and general ware. These factors, coupled with labor differences, have resulted in materially decreasing the output of about forty plants in this city, altho electrical and specialty potteries continue to run overtime. The greatest handicap to the business is the shortage of English ball clay, which is now almost unobtainable, and for which no satisfactory substitute has been discovered.

A new double decorating kiln has been built at the plant of the Thompson Pottery Co., in East Liverpool, and a pair or four decorating kilns is now being added to the initial capacity of the Steubenville, Ohio, Pottery Co. There is also a tendency in the Eastern Ohio pottery district to convert all up-draft glost and bisque kilns into the down-draft type. A greater degree of heat is possible when this type of kiln is used. The Gamble-Bryan system is being adopted by the majority of pottery manufacturers when making these changes in their kilns.

John Stamm, for many years general manager of the National China Co., at East Liverpool, Ohio, and one of the best known factory superintendents in the domestic lines, has assumed the management of the D. E. McNicol Pottery Co.'s plant at Clarksburg, W. Va. Of late Mr. Stamm has been connected with the sales department of the Croxal Chemical & Supply Co., at East Liverpool. He is a student of ceramics, and thru his efforts the formation of the Factory Managers Club was brought about at East Liverpool.

Two additional kilns are being built at the plant of the Paden City (W. Va.) Pottery Co. This plant is owned by Pittsburgh (Pa.) interests, and had an original capacity of three kilns. The first underglaze white lined decorated cooking ware was made at this pottery by Edward J. Owen, now general manager of the new plants of the Southern Potteries Co., at Erwin, Tenn. The Paden City pottery is now under the management of C. U. Harris, and the kilns will be ready for service within six weeks.

The former yellow ware pottery of Patterson Bros. Co., in Wellsville, Ohio, which was recently taken over by the Sterling China Co., of East Liverpool, Ohio, is now engaged in the manufacturing of vitreous china. Only a small line is being made now, and the first kiln has been drawn. The company is composed of Newell (W. Va.), and East Liverpool and Wellsville (Ohio) interests. The plant has a capacity of four kilns, and is the only one in the Eastern Ohio district making this class of ware.

Within three days, over $25,000 was subscribed in East Liverpool for the Army and Navy Y. M. C. A. fund. This was over $3,000 more than the amount required in the original apportionment. W. Edward Wells, chairman of the Labor Committee of the United States Potters Association, and of the Homer Laughlin China Co., and Homer J. Taylor, president of the Knowles, Taylor & Knowles Pottery Co., took an active part in the campaign, each being the captain of different teams.

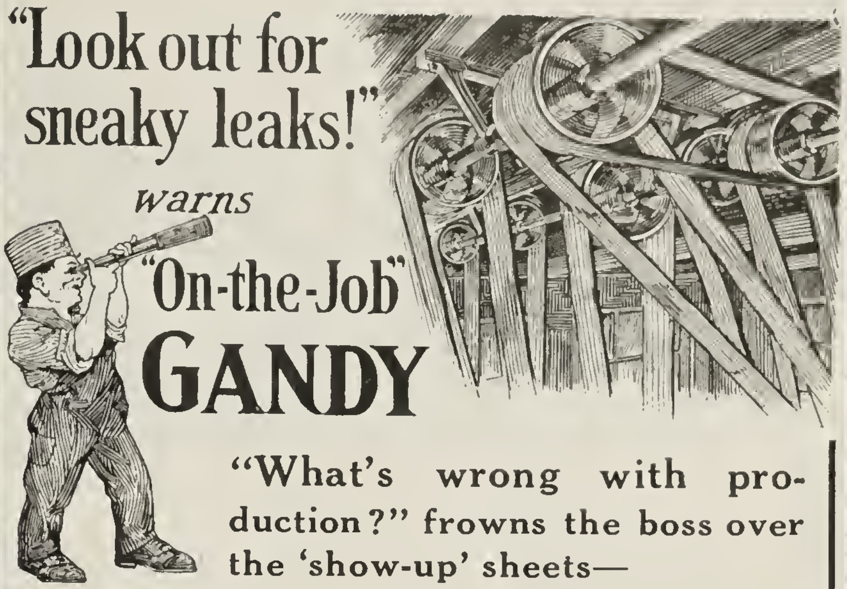
The Alliance (Ohio) Vitreous China Co.'s plant is operating in the remodeled plant formerly used by the Alliance Tire and Rubber Co. The plant is manufacturing kitchen and bathroom accessories, including towel racks, towel bars, mugs, cups, creamers, etc. The company is teaching the work to girls and other classes of help, instead of drawing its helpers from Sebring and other pottery cities. It will start with a small capacity and develop as conditions warrant.

Foundations have been built for an additional seven kiln plant at Erwin, Tenn., for the Southern Potteries Co., which corporation is under the management of Edward J. Owen. This will be the second seven-kiln plant to be built in Erwin by the same concern. The firm recently made the announcement that it had experienced no trouble in obtaining a steady supply of coal for its kilns, and that a steady supply of fuel was guaranteed thruout the winter season.

James J. Collins, a well known potter of Trenton, N. J., has joined the aviation corps and is now stationed at Mineola, L. I. As soon as his period of training is completed he will go to France. He has been in training heretofore at Fort Slocum, San Antonio, Texas, and Mt. Clemens, Mich. He is about ready to start for the front. When in Trenton a few days ago he said he expected the call at any time.

Positive reports have reached domestic pottery manufacturers that considerable ware en route from England to the United States has been lost during the last summer thru the sinking of ships, and also in the recent warehouse fire at Baltimore. Only a few weeks ago it was reported that a French ship enroute to an American port was lost and that a valuable cargo of French china had been destroyed.

Lenox, Inc., of Trenton, has raised a service flag over its building bearing five stars. Four of those whom it represents were in the office force. Others are to go in the later



"Look out for sneaky leaks!" *warns* "On-the-Job" GANDY

"What's wrong with production?" frowns the boss over the 'show-up' sheets—

"Same material; same hours; same men; same machinery, but production falling off."

"Sneaky leaks", whispers *'On-the-Job' GANDY.* "A slip here and a slack there aggregate short production—real loss!

"What you need is a steady power belt built for the job—a belt that under the severest strain and wear has passed every efficiency and longevity test—a belt with a 'round the world 37 years' satisfaction record."

That's a *GANDY* the original stitched cotton duck belt—the all-the-time belt, but especially needed NOW for wartime production.

Order your *GANDY* belts (power or conveyor) through your Mill Supply House or Home Plant direct. Look for the painted green edge and well known trademark.

Write for samples and prices

THE GANDY BELTING CO.
732 West Pratt Street,
BALTIMORE, MD.
New York Branch, 36 Warren Street

DU PONT AMERICAN INDUSTRIES

Blasting Helps the Big Shovels

Load Bore Holes WITH Red Cross Extra

The Universal Explosive

Red Cross Extra Dynamite is a LOW FREEZING, all-the-year-'round, high efficiency explosive especially recommended.

For Clay Blasting

It is made in all standard strengths from 20 to 60% and guaranteed to be as represented by cartridge markings.

Red Cross Extra Dynamites are as strong, stable and efficient as any other standard explosive.

If no test of Red Cross Extra has been made, make one at once,—it is the least expensive and most efficient explosive.

Tell us what your blasting work is so that we can suggest how to use RED CROSS EXTRA efficiently and economically.

E. I. du Pont de Nemours & Company
Wilmington, Delaware
Powder Makers Since 1802

Du Pont American Industries
E. I. du Pont de Nemours & Co.
Industrial, Agricultural, Sporting and Military Explosives.
Du Pont Fabrikoid Co.
Fabrikoid, Rayntite and Fairfield Rubber Cloth.
The Arlington Works
Ivory PY-RA-LIN and Challenge Cleanable Collars.
Harrisons, Inc.
Paints, Varnishes, Pigments, Acids, Etc.
Du Pont Chemical Works
Pyroxylin and Coal Tar Chemicals.
Du Pont Dye Works
Dyes.

DU PONT

calls. Each of the five is to be kept on the company's payroll and will receive the difference between what the government pays and what they formerly received from the concern.

Pottery supply salesmen announce the loss of a shipload of clay from England when the British bark "Cupica" was sunk by a German submarine. This English china clay was loaded in August, and as the supply of this clay in this country is short, the loss may be felt sooner or later. This is the first ship carrying clay reported sunk in many months.

The Nashville (Tenn.) Pottery Co. report big business from road salesmen and says conditions are good in the South. The company is manufacturing white and black glazed stoneware. Water filters, water coolers, jardiniers, flower pots, milk pans, jugs, and jars are also being turned out.

The Potters' Equipment Co., Trenton, N. J., has been incorporated with a capital of $10,000 to sell kilns and various other equipment. The incorporators are Rudolph Gaertner, New York; Marc Solon, and Francis C. Lowthorp, both of Trenton.

The Porcelain Enamel & Manufacturing Co., Baltimore, Md., has had plans prepared for the erection of a new factory at Nayard and Ridgley streets, to cost about $200,000. P. O. Koilholtz, Continental Building, Baltimore, is engineer.

Following the completion of the new spur track of the Southern Pacific Railroad, the Cannon-Phillips Co., successors to the Sacramento (Cal.) Clay Products Co. has built a large addition to its tile factory.

The Resolute Pottery Co., Trenton, N. J., has taken out a building permit for the construction of a new two-story addition to its plant on Third Street. Plans for the structure are now being prepared.

The Trenton (N. J.) Potteries Co. and employes have subscribed $60,000 to the Second Liberty Loan.

The Washington (N. J.) Porcelain Co. is taking bids for the erection of one-story kiln sheds to cost $25,000.

The employes of the Eljer Pottery Co., at Cameron, W. Va.; bought $7,000 worth of Liberty bonds.

The California civil service commission has announced the appointment of C. E. Aldrich to the position of building inspector with the department of state engineering.

* * *

FREIGHT RATE WAR TAX *in* EFFECT

(*Continued from Page* 1030.)

be made at the final destination named in the final reconsignment order and will cover the service from the initial point of origin to the ultimate destination.

ASSESSMENT ON FINAL VALUE OF SHIPMENT

As a matter of practical application, the most intricate question that will be faced in connection with the new tax is the assessment upon shipments of commodities entitled to transit privileges such as milling, dressing, fabricating, and refining. A tentative agreement, subject to the approval of the Secretary of the Treasury, has been reached that the measure of the tax shall be three per cent. of the amount paid for the transportation of the finished product from the starting point of the raw material to the final destination of the finished or milled product and that such tax shall be paid as and when such transportation charges are paid. Amounts paid for transportation to transit points upon traffic not reshipped therefrom are also subject to the tax.

When transportation charges are paid upon the raw material into the transit point, a three per cent. tax will be collected at the same time, regardless of the fact that the freight rates may be locals subject to re-adjustment upon movement of the finished product out of the transit point. When readjustments of charges are made on the outbound movement to the basis of the proper thru rate, there will also be a readjustment and refund of a proportionate amount of the tax paid on the movement into the transit point.

"By such a process," explain the carriers, "the transportation cost on the milled or finished product becomes subject to the full tax, so that, if the transportation costs on the milled product be billed collect, the tax must be collected by tion point of the finished product, be prepaid at the milling point, the agent collecting the transportation costs must also collect three per cent. tax on the full amount thereof. If the milled product be billed collect, the tax must be collected by the agent at destination of the finished product."

Express shipments are subject to a tax of one cent for each twenty cents or fraction thereof paid for express transportation.

* * *

More Ohio Firms Cut from Gas Supply

Unless a factory or shop in Cleveland (Ohio) district is making munitions of war, it will be deprived of its use of natural gas. This seems to be the condition developing as regards fuel in the Cleveland district, following the action of the East Ohio Gas Co. in shutting off the supply of gas from many more plants in that city and adjacent territory on November 15. The basis for this action on the part of the gas company is two-fold—the city chemist's offices want all the gas for household consumption this winter, and the government wants its munitions as fast as it can get them. To obtain the former end City Chemist White has been to Washington to confer with Secretary of War Baker, who was, by the way, Mayor of Cleveland before being appointed to his present post.

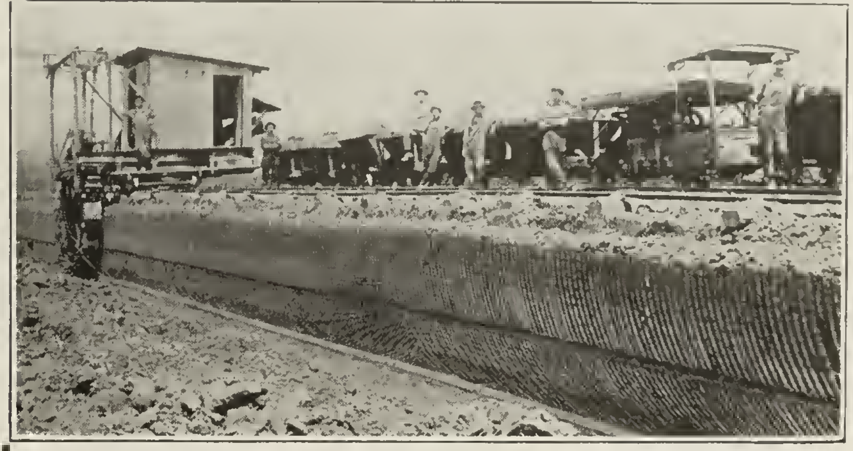
Meanwhile the coal shortage has been reduced somewhat by the setting aside of several "all Ohio" coal days, on which days all coal mined in Ohio has been consigned to consumption within the state. Pooling of shipping interests, for the general benefit of the state, also has helped the situation. At a meeting at Hollenden Hotel during November, at which railroad men, coal operators, and state administrators were present, this was declared to be the only solution of the traffic stringency, it being pointed out that only by conservation of the present equipment and use thereof could the greatest efficiency be obtained. When carried out this pooling agreement gives simplified terminal conditions, eliminates cross switches by filling orders from available cars, eliminates reconsignment of coal, and expedites loading and unloading and delivery of coal and cars.

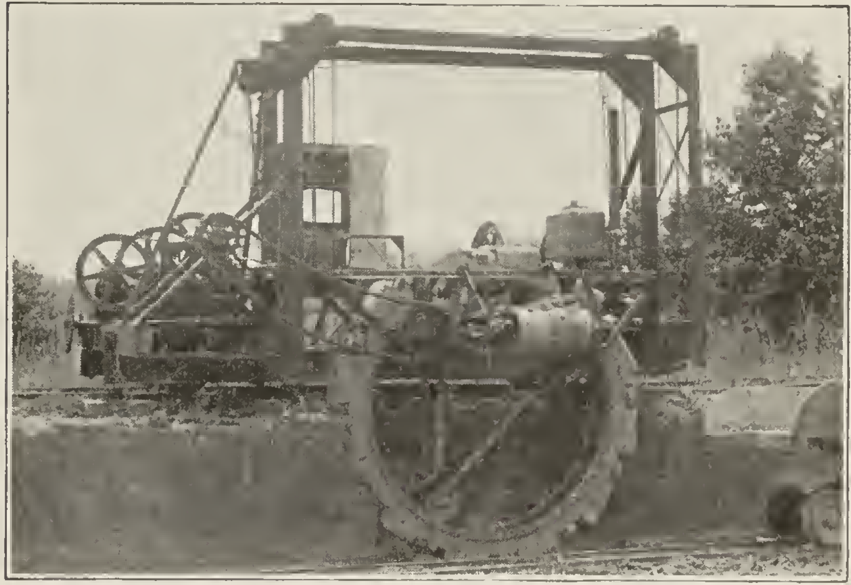
The BUCKEYE Digger delivers the clay either

UPSTAIRS

or

DOWN





Whatever you want or need for your particular pit conditions can be had. The machine will deliver the clay to cars on top of the bank or to cars in the pit itself.

A clean, uniform slice is taken each time the reel revolves, and perfect mixture with large capacity is the result of one or two men and the Buckeye. Get particulars.

The Buckeye Traction Ditcher Company

Findlay, Ohio

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

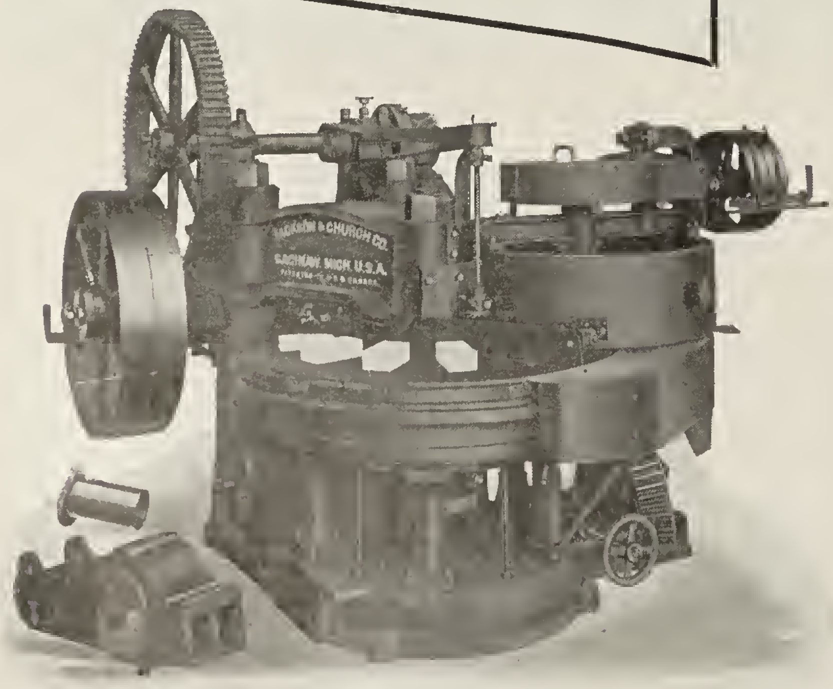
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

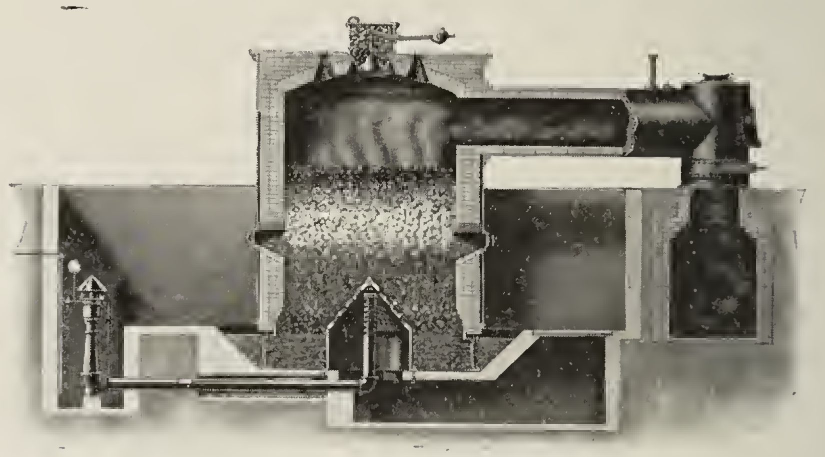
MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

"More Business Than Usual"

The International Clay Machinery Company has gone one better than the popular slogan of "Business as Usual," in their present slogan of "More Business Than Usual." To back it up, they report a most active condition in most clay industries with special emphasis on the fire brick trade. Many new plants are going in for the manufacture of fire and silica brick, and many face, building and paving brick plants are rearranging their equipment and product to meet present conditions of the trade.

Among the many outfits "International Service" has sold are included: A complete unit of hollow-ware equipment, including largest capacity modern machinery, a 16 Tunnel International Producer Gas Fired Dryer, and the largest Producer Gas Fired Continuous Kiln on the continent, was recently sold the Barber interests of Canton, Ohio, for their new plant which is now under construction a few miles below Canton.



International Producer with Connections to Underground Flue.

A recently organized Baltimore fire brick concern has purchased an entire outfit of stiff-mud machinery, dryers and International Kilns for the manufacture of stiff-mud fire brick. A full line of dry-press machinery has been recently sold for the establishment of a new plant at Clarksdale, Ariz., for the manufacture of fire and building brick. A Columbus, Ohio, firm is now installing three Berg Presses and auxiliary equipment in its two plants, changing both over from face brick to fire brick. The largest insulating material company in the country is now installing the equivalent of a 24 Tunnel Producer Gas Fired Dryer for the drying of insulating board, this being the second installation of International equipment put in by this concern.

The state of Indiana has recently purchased an outfit of International equipment for the manufacture of vertical fiber paving block. There seems to be a considerable call recently for equipment to be used in the manufacture of various types of vertical fiber brick and block.

International has also been perfecting a line of heavy duty pottery machinery, and has recently sold several outfits to representative potteries.

A Philadelphia concern has just completed the installation of an International hollow-ware outfit, in this case using wet pans for pugging instead of the ordinary pug mill. International is furnishing its heaviest duty hollow-ware equipment for a new hollow tile plant that is going in near Mason City, Iowa. A Fond du Lac, Wis., firm has recently installed their Producer Gas Fired Dryer. International further reports the changing over of six

Direct Fired Steam and Waste Heat Dryers to Producer Gas.

While Canada is going slow at present on clay ware manufacture, International recently installed a large Metallic Radiation Dryer in Montreal.

The industry seems to be calling for special equipment in dryer cars, kiln cars, and International's car shop has been pushed to the limit. With the present extreme high tension in the steel industry, quite a number of grinding pans have been sold both to iron and steel foundries.

Foreign business is reported as picking up rapidly, as it is practically impossible to purchase European clay-working machinery in Spanish-American countries on account of the transportation problem. In this regard International recently sold a complete dry press fire brick outfit, including a Producer Gas Fired Continuous Kiln to Cuba, this being the second Producer Gas Fired Continuous Kiln sold to Cuba within the last year, the first one being in full operation on wire cut brick.

International will take pleasure in furnishing any interested clayworkers with a list of those concerns that have recently availed themselves of "International Service."

* * *

A Labor-Saving Conveyor

The clay plant is built around the conveyor, it is the heart of the plant, or in other words, the arteries upon which the clay moves to the several departments. Formerly, the conveyor was always stationary and its usefulness limited accordingly; there was no mobility or elasticity.

Knowing the necessity of transporting clay, the Barber-Greene Company, of Aurora, Ill., offered to the clay manufacturers a portable conveyor which could be moved easily from place to place, to convey materials that were out of reach of the stationary conveyors.

Particularly, at this time, when Uncle Sam has taken so many men, it is more than ordinarily a valuable adjunct to the clay plant.

The B-G Portable Conveyor is already a success in handling clays, coal and ware, and it not only does what it is designed to do, but it is saving men, doing the work required with from one-third to one-half of the men formerly employed.

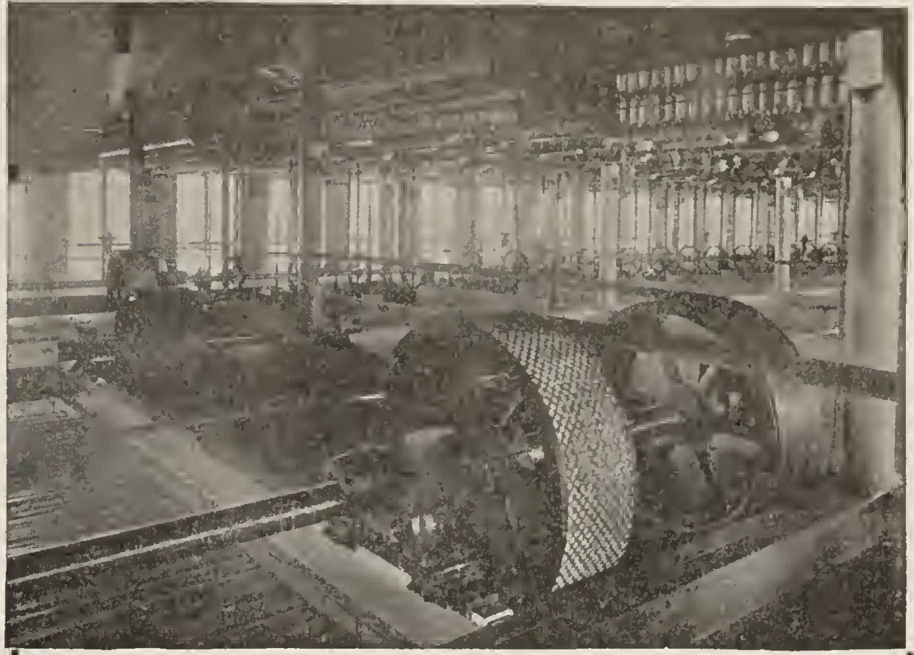
Many of them are already in use on clay plants, and from What Cheer, Iowa, at the plant of the What Cheer Clay Products Company, comes the interesting information that in the clay storage shed, where their portable conveyor is used, they formerly used three or four men and now are enabled to do the same work with but two men.

E. G. Nelson, secretary-manager of the What Cheer company expresses himself as being "very much pleased and well satisfied."

Barber-Greene Portable Conveyor is a Success in Handling Clay, Coal, Etc.

A Story of a Pulley—

The experience of a manufacturer who unexpectedly proved the direct influence of the pulley on the motive power. First—look carefully at the illustration:



The pulley at the extreme right and a similar pulley (not shown) receiving from the pulley in the foreground measures 48" diameter by 22" face. Now they are both

Cork-Insert Pulleys

They used to be ordinary smooth face pulleys each driven by one of the 64" diameter pulleys in the center of the picture. With a full load there was more or less slip and considerable loss of motive power.

The first change was to a 48" Cork Insert pulley, shown at the extreme right, leaving the driving pulley as it was, on the theory that a 64" pulley got enough extra contact on the belt to prevent slip there. One morning when the drive was quite heavy the machinery refused to run, altho the engine was going and the 64" driving pulley was turning. **The belt held on the 48" Diameter Pulley, and as a result suffered considerably where it was in contact with the 64" pulley, inasmuch as the large pulley was moving and the belt was stationary. It was held fast by the 48" pulley with the Cork Inserts.**

After that the 64" pulleys and the other 48" pulley were changed to Cork Insert pulleys, and since then there has been no further trouble. There is no loss whatever of the motive power applied to the pulleys. They are getting full efficiency.

Every brick plant manager ought to see in this story the moral that the motive power that is lost as a rule in a single season's run costs a great deal more than it would take to equip a plant with Cork Insert pulleys. These absolutely prevent a belt from slipping, and they apply every bit of the motive power to the machines they drive. There is no other way to obtain full efficiency at anything like the cost of Cork Insert pulleys.

Further information will be cheerfully furnished if you will give us certain information on a blank which we will be glad to mail you.

THE CORK INSERT COMPANY
168 Federal Street **Boston, Mass.**

Your Coal Troubles Are Not Over

The tentative prices made by the government do not insure against shortage next winter.

You will have difficulty in securing the coal necessary to the operation of your plant.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

New Bonnot Bulletin

In a bulletin just issued by the Bonnot Company, of Canton, Ohio, the various types of auger machines and pug mills are discussed in detail.

Each machine is illustrated and then is analyzed by parts, such as sub-base, frame, drum, nozzle, shafting, gears, bearings, pulley, auger, dimensions and daily capacity. Thus a clear, concise and easily comparable statement is made about each machine and each part; and its value to "the man who wants to know," is very obvious. You may have this by asking for Bulletin "AP."

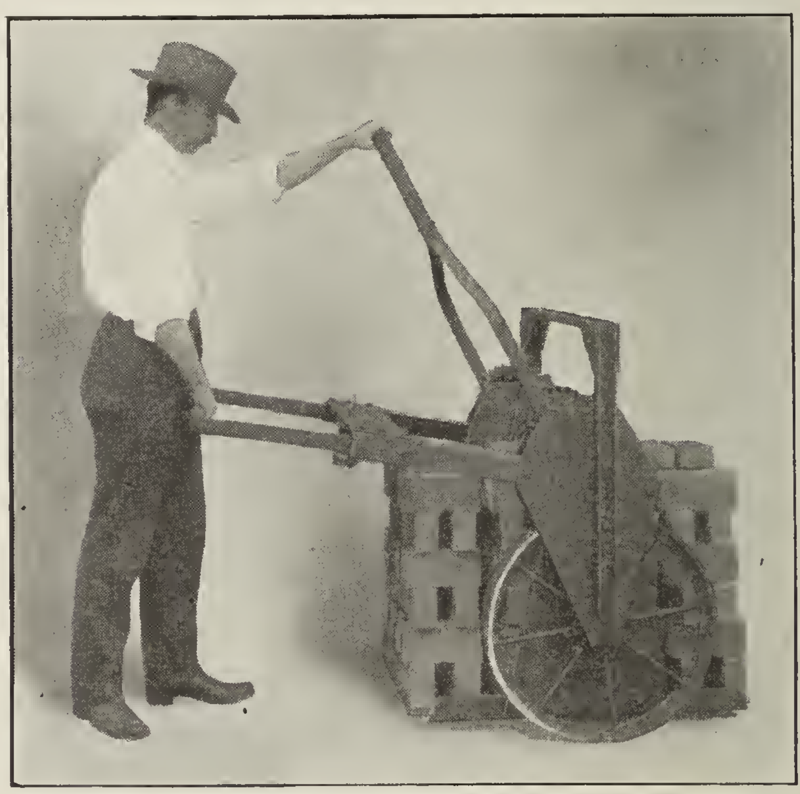
⁂

Another Drymore Labor Saver

The accompanying illustration will give a good idea of the operation of the No. 5 Drymore Truck—the latest Drymore labor saver.

A slatted pallet is placed in a convenient position beside the cutter or repress—preferably on a slightly elevated platform with an inclined approach. The brick are then hacked on this pallet, and the No. 5 Truck, with lifting bales lowered, is run over the load; the pallet of 100 or more brick is lifted by lowering the lever; and the truck with its load proceeds to the drying shed, or dryer, where the load is deposited. Here it remains until the brick are dry, when the loaded pallet is again picked up by the No. 5 Drymore Truck and taken to the kiln.

In this manner one man will handle a large quantity of brick with comparative ease, and as the brick are not handled individuals after being placed upon the pallet at the cutter, they retain their perfect shape and appearance.



No. 5 Drymore Truck.

With the No. 5 Drymore Truck the load is lifted straight upward—not tilted, and as it is cushioned with a spiral spring during transportation, much of the usual vibration and jar are eliminated.

This truck is also used in connection with the No. 5 Drymore Artificial Dryer, an inexpensive form of dryer for plants of moderate capacity. It is also well adapted to handling fire brick, etc., on hot floors, and for open air drying.

This is one of the four Drymore Systems sold by The Drymore System, of Galion, Ohio.

⁂

In an extra special bulletin No. 228, the Walter A. Zelnicker Supply Company, of St. Louis, Mo., announce the purchase of twenty-eight Oil Storage Tanks.

In Bulletin 227, they announce thirty-two pages of bargains in rails, Railway equipment, Machinery, Tanks and Piling.

American Clay Machinery Company 1157-1159
American Pulverizer Co. 1166

Baird Mach. & Mfg. Co. 1143
Ball Engine Co. 1105
Beighlee Electric Co. 1146
Black Diamond 1152
Bonnot Co. 1098
Bristol Co. 1145
Broderick & Bascom 1141
Brown Instrument Co. 1110

Canton Grate Co. 1147
Celite Products Co. 1140
Chambers Bros. Co. 1101
Chase Fdry. & Mfg. Co. 1165
Clarage Fan Co. 1138
Cleveland Alloys Co. 1161
Classified Ads 1174-1176
Cling-Surface Co. 1153
Cork Insert Co. 1138
Crescent Belt Fastener 1139
Cyclone Grate-Bar Co. 1144

Didier-March Co. 1168

Eagle Iron Works 1140
Elwell-Parker Electric 1147
Englehard, Chas 1107
Exner, J. E. 1149

Fate Co. 1177

Gandy Belting Co. 1151
Garnet Company 1161
General Electric Co. 1109
General Store 1161
Goodrich Co. 1138

Hardinge Bros., Inc. 1139
Harris Bros. Co. 1175
Hendrick Mfg. Co. 1165
Hettrick Mfg. Co. 1148
Homestead Valve Mfg. Co. 1139

International Clay Machinery Co. 1102-1103

Jackson & Church Co. 1156

K-B Pulverizer Co. 1141
Keystone Driller Co. 1148

Lakewood Eng. Co. 1171
Link-Belt Company 1108

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other Tuesday by

Kenfield-Leach Company
610 Federal Street Chicago

Chicago, December 18, 1917
Vol. 51 No. 13

Leading Articles in This Issue

Face Brick Makers Not Discouraged 1114
Dealers Enthusiastic 1117
Enlist for Service 1119
Building Success Upon the Ashes of Failure 1122
Open Price Plan and the Law 1126
Casting of Heavy Clay Ware 1129
Creating a Market for Face Brick 1132

* * *

The Editor's Corner 1112

* * *

Special Departments

Machinery and Equipment 1153
Questions and Answers 1140
The Superintendent 1137
Wake of the News 1144

Main Belting Co. 1099
Manufacturers Eq. Co. 1100
Marion M. Fd. & S. Co. 1140
Marion Steam Shovel Co. 1145
Marsh & Co., Geo. C. 1176
Martinique Hotel 1141
Mathews Gravity Carrier 1167
Morgan Co., F. W. 1138

Ohio Filler & Shield Co. Front Cover
Ohio Galv. & Mfg. Co. 1166
Orenstein-Arthur Koppel Co. 1169
Osgood Co. 1165
Owens Continuous Tunnel Kiln Co. 1161

Philadelphia Textile Machinery Co. 1104
Potts & Co. 1138
Price Electric Co. 1142

Quaker City Rubber Co. 1169

Roessler & Hasslacher 1142
Rollin Chemical Co. 1150

Sanderson-Cyclone Drill 1139
Sauerman Bros. 1138
Sawyer Belting Co. 1170
Scandinavia Belting Co. 1143
Schofield-Burkett Cons. 1168
Sero-Specialty Co. 1141
Service Motor Truck Co. 1106
Smith Co., Claude 1097
Standard Dry Kiln Co. 1146

Taylor Instrument Companies 1149
Thew Auto Shovel Co. 1170
Thwing Instrument Co. 1144
Trautwein Dryer & Engineering Co. 1097

Union Chain & Mfg. Co. 1138

Victor Balata & Textile Belting Co. 1165

Watt Mining Car Wheel 1167
Webner, F. E. 1161
Webster & Kincaid Back Cover
Weller Mfg. Co. 1096
Westinghouse El. & Mfg. 1171
Wood & Co., R. D. 1155

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

Coal Conservation

THE COAL PROBLEM is becoming more and more pressing. The recent cold spell has brought this fact home with great force. In some localities factories have had to close because of lack of fuel.

Much of the deficiency in the coal supply during the recent cold weather has, of course, been due to car shortage and transportation difficulties, but Harry A. Garfield, fuel administrator, says "one hundred million tons of coal more than is normally produced in the United States is needed this year for war purposes. The possible increase in production is fifty million tons and only frugality in the use of coal in homes and factories will prevent a serious shortage."

It is interesting to note in the above connection a statement made by David M. Meyers at the annual meeting of the American Society of Mechanical Engineering held in New York in the early part of this month, to the effect that last year the United States mined in the neighborhood of six hundred million tons of coal, of which fifty million tons was wasted. If we could save the coal that Mr. Meyers says is wasted, it would go half way toward filling the war order calling for one hundred million tons extra this year.

The prevention of waste in the use of coal is one of the most important matters of the hour. In line with this thought, *Brick and Clay Record* is preparing a series of articles on the fuel question as it applies to the clayworking industry, the first one of which is to appear in the January 1 issue covering the subject of combustion. Articles to follow will deal with furnaces and stokers; fuels; design of ceramic furnaces and burners; firing and cleaning burners and fire boxes; flue gas analysis and draft gauges as a guide to proper burning; and the pyrometer as an aid to fuel economy.

These articles should command your closest attention. As clay products manufacturers, using fuel in burning kilns and under steam boilers, it is your duty to take every possible step looking toward a saving in fuel.

It is fortunate that the season when clay plants are not so busy comes at the same time as the period when demand for coal is greatest. In other words, the hampering hand of Winter upon full-time operation of clay plants is more or less of a blessing under present circumstances. As spring comes on and it is possible for clay product manufacturing institutions to operate to capacity at lower costs, a greater part of the demand for coal for heating purposes will have subsided.

However, we must do all we can this winter to save coal by efficient firing of boiler furnaces and by the economical use of fuel in burning clay wares. Producer gas, powdered coal, oil and other fuels and methods of using them, should receive the greatest consideration at the hand of every ceramic engineer. Coal economy and then greater economy should be our watchword in present crises.

* * *

A Federalized Building Industry

INDICATIONS have not been wanting that persons and interests in positions of power have regarded the building industry, as a whole, to be one of minor importance and non-essential as a part of the nation's industrial fabric during the war.

There was a great deal of talk, not many months ago, with regard to the stopping of a great part of the nation's building. It was felt that the labor and material being devoted to this so-called "unnecessary" work might be put to better advantage in some other channel. Recently a New York daily carried an editorial which said in a very flat-footed manner that building was an unnecessary activity at this time and should not be allowed to proceed.

Economists tell us that food, raiment and shelter are the three primary needs of mankind. The periodic and insistent demands of the inner man make it imperative that the business of supplying food to all the inhabitants of the United States go on without interruption. Climatic conditions and common decency demand that we be properly clothed. Altho shelter has been placed last, it is by no means the least, for if we are to have our health and enjoy ordinary comforts of life we must have proper shelter.

We speak with a knowledge of facts when we say that the population of the United States at the present time is not properly housed. This condition, in a large part, existed before the entrance of this country into the war, but since war needs have become so imperative, the matter of proper housing for America's workers has become more and more a crying problem. We believe that we are speaking the truth when we say that a great many of the workingmen and their families are not living under the best of housing conditions. If the efficiency of labor is to continue and increase, labor must be properly sheltered.

Those who are yelling for a discontinuance of building, on the ground that it is not essential, we are sorry to say, do not know whereof they speak. Essential building must go on and we believe will go on. No one interested in the building industry wishes to have building proceed if it is going to interfere with the conduct of the war. This goes without saying, but it is yet to be proved that necessary building will in any way interfere with the government's war plans.

The solution of the present building situation, so far as those who are primarily interested are concerned, is an organized industry. Some individuals have already raised their voice in behalf of a federalized building industry. Their idea is good and should receive the support of clay products manufacturers and dealers everywhere as well as the manufacturers of other building materials, architects, contractors, real estate men, the building trades, and so forth.

A meeting is to take place some time early in January in New York City at which definite plans will be discussed looking toward the formation of a national organization of building interests. Full details, so far as they are obtainable, concerning this meeting will be published perhaps in the next issue of *Brick and Clay Record,* so that our readers will be fully acquainted with the developments of the situation.

* * *

Open Yards vs. Modern Clay Plants

THE EDITOR is in receipt of the following communication from Christopher Steadman, New York:

When I opened "Brick and Clay Record" this morning, the first thing I saw was "The Survival of the Fittest," and I read the article with much interest. Your statement that most Hackensack and Hudson River brickmakers use antiquated machinery and methods interests me very much. For a great many years I have been working in New York, New Jersey and New England in the standard building brick business and have manufactured and had charge of manufacturing a great many millions of common brick per year. I have not only made a careful study of all the different methods of manufacturing, drying and burning, but have actually put them into operation side by side to find the method that would give us the best brick at the lowest cost, and it is a fact that these open yards you call antiquated will produce brick at a lower cost than the so-called permanent, modern plant. I mean by permanent plant, one that runs all the year, using the steam-pipe dryer or tunnel dryer or any other artificial drying method known, together with all the other latest appliances. As to the burning equipment and method being a grief to the industrial engineer, if you know of any burning methods in the country that are more economical than those used in New York and New England, please enlighten us.

No doubt you will say, why does it cost more to make common brick in a permanent plant than it does in the open yard proposition? There are a great many reasons. The open yard man has practically no overhead expense. His maintenance and repairs are very low and when he stops manufacturing in the fall of the year, with possibly a good stock of brick in his sheds, he doesn't have to worry much about his plant depreciating and rusting away. In fact when spring comes he can start up for a very few dollars. And another important reason is that in this cold climate it costs pretty close to one dollar per thousand more to manufacture common brick in the winter time compared with the cost thru the good summer weather. The permanent plant is one continuation of maintenance and repairs. We have two of them and I believe I know a little about the depreciation and upkeep of them. One plant is located near the Hackensack district, where we work the artificial drying and the rack and pallet open air system in conjunction with each other and at this yard the open air drying is done much cheaper than by the artificial method.

Please understand that I confine my talk to New York and New England and the part of New Jersey near New York, and the manufacturing, drying and burning of common brick in these districts.

We are taking the liberty of reproducing Mr. Steadman's letter for the benefit of our readers, trusting that he will have no objection. We are very glad that he has written us concerning this subject, since his letter brings out facts not often discussed and therefore not familiar to many in the clayworking industry.

We are, however, of the opinion that open yard methods, involving the consumption of considerable labor, are not going to be as economical after the war as they were before hostilities broke out. It is very questionable that there will be a generous supply of cheap labor when peace is signed so that the cost of making brick in open yards will of necessity undergo a material change. Altho not having figures to back up our statement, we will venture to say that common brick in Cook County, Illinois, now the largest brick producing center in the world, is made more cheaply than is brick in open yards in the Hudson River or Hackensack districts. It is a well known fact that Cook County common brick plants are of the most modern type, employing some very excellent labor saving devices.

We believe it would be productive of good if the manufacturers of clay products interested in the open yard method and the permanent plant method of making clay products, would enter into a full discussion of the merits pro and con.

Brick and Clay Record is perfectly willing to furnish the space for such a discussion, feeling that it will help all of us to a better understanding of the methods employed in the Hackensack and Hudson River districts. If you are interested in this matter, write the Editor.

FACE BRICK MAKERS

Enthusiastic, and Fairly Well Attended Convention at
tion's Promotion Plan, the Consummation of Which Is
Plan; the Helpful Influence of Group Meetings; Closer
Organization of All Building Interests; Standard Sizes

JACK FROST laid a heavy hand upon trains occupied by face brick manufacturers and dealers French Lick bound, last week, causing delays ranging from one hour to twenty-four in the arrival of delegates to the annual meetings of the American Face Brick Association and the Face Brick Dealers' Association of America, at southern Indiana's famous health resort, December 12, 13 and 14. While a number of these delays were very annoying, ruffling up the temperament of otherwise congenial brickmakers, they were in most cases made the object of good-natured comments and were the substance of not a few stories of the fish variety. With the arrival at headquarters of each new contingent, came a fresh batch of fabulous tales regarding the length of time spent on the road, until it seemed as tho some of the members had spent a couple of weeks in getting to the scene of convention activities.

STRANDED AT CINCINNATI

Wednesday morning, December 12, saw but a slim delegation of brick men on hand at the French Lick Springs Hotel. As the day wore on, members kept coming in. Five o'clock came, but still it did not seem that all had arrived. Rumers were current that there were still some brick men on the road, when the following message, signed by T. P. Cuthbert, of the Fallston Fire Clay Co., Pittsburgh, Pa., was received:

"McNees, Martin, Fiske, Everhard, Stratton, Reid, Gardner, Degenhardt, Winters, Thompson, Knight, Rainey, Knoske and six others stranded at Cincinnati. Send Zeppelin or some other succor. One more sucker would make nineteen."

Pluto, the Most Beautiful of French Lick's Springs

The unexpected cold snap together with a heavy fall of snow, put an added strain on railroad transportation which it was not prepared to bear, and so it simply fell down under the load. Difficulties accompanying attendance at the annual meeting of the face brick manufacturers and dealers are not to be taken as typical of what is to be encountered at other clayworking conventions which are to follow early next year. The first spell of cold weather always plays havoc with train schedules, but as soon as the carriers become accustomed to the seasonal change, trains will move as usual.

ATTENDANCE FAIR IN SPITE OF OBSTACLES

In spite of elemental and business difficulties, the attendance at the sixth annual meeting of the American Face Brick Association was fair, approximately one hundred and twenty-five names appearing on the register. Of this number, of course, a good part were dealers.

Due to the delay in arrival of both the face brick manufacturers and dealers, no meetings were held on the first day of the dual conventions.

The manufacturers began their first session on the morning of the thirteenth with the usual calling of the roll. The reading of minutes was dispensed with.

George A. Bass, of the Hydraulic-Press Brick Co., St. Louis, Mo., president of the association, delivered his address, which was brief and very much to the point. In a few words he touched upon conditions in the face brick industry and indicated the course that lay before the association. Mr. Bass' address, which is so clear and concise an exposition of the situation, is reproduced in full on page 1119 of this issue.

Secretary-Treasurer R. D. T. Hollowell followed with his annual report, in which he pointed out that the association had made a net gain in membership of seven. "Our traffic department has had a very busy year," said Mr. Hollowell. "It has quoted 2,304 rates, filed 53 claims, totaling $445, of which 48 have been paid, totaling $419.41." Other matters of interest regarding the traffic department were mentioned, prominent among these being the campaign to secure maximum loading of cars and the Fifteen Per Cent. Case.

BRICK AND CLAY RECORD'S CONTEST PRAISED

The members' attention was again called to the credit facilities of the association and particular mention was made of *Brick and Clay Record's* prize competition for the best paper on Paragraph Four of the A. F. B. A. Code of Ethics, which proved so successful in arousing interest in the subject under discussion and the association's ethical code in general.

The work of the committees on cost accounting and the open price plan came in for considerable mention in Mr. Hollowell's report. Concerning the first mentioned, it was said that model bookkeeping forms and hand-book for ex-

NOT DISCOURAGED

French Lick, December 12, 13 and 14, Discusses Associa-
Within Sight; Further Progress Regarding Open Price
Co-operation with the Dealer; the Support of a Federal
and Terminology, as Well as the Excess Profits Tax

planation of the cost system adopted by the association would soon be available; mention was made of the remarkable success of the open price plan. In this connection, since January 1, of this year, the secretary's office has distributed 178 separate quotation schedules, amounting to 224 pages of the standard form. Schedules were filed for 61 companies or branch offices, and six such schedules have remained unchanged since the first of the year, eighteen have been changed twice, nineteen changed three times, ten changed four times, seven changed five times and one changed seven times. In addition twenty-six quotation correction bulletins, making minor changes in quotation sheets on file, have been distributed. Also there have been thirty deviations formally reported, compiled and distributed, according to the secretary-treasurer's report.

GROUP MEETINGS EXTREMELY HELPFUL

The important part which the divisional meetings have played in the work of the association were also mentioned. "It would be folly to attempt to estimate the monetary gain which the manufacturers, attending the various monthly conferences, have been able to realize by reason of the information brought out by discussions on the cost and the supply of labor and fuel, terms of sale, reductions in size to conform to standards informally adopted, protection against drastic transportation requirements, etc.," said Mr. Hollowell.

A very important part of the secretary-treasurer's report was the comment on the association's promotion plan, which was fully discussed in the September 25 issue of *Brick and Clay Record.* Inasmuch as most face brick manufacturers are familiar with the details of this plan, no further mention will be made of it here, except to call attention to the change which was adopted by the Board of Directors, which provides for a sum of less than fifty cents per thousand if the board sees fit, to be applied to the support of the association's regular work and the promotion plan. Owing to the late date at which this change was made, it was not possible to report that the necessary minimum production for the successful prosecution of the plan had been signed up.

EXACT STATUS OF PROMOTION PLAN

"Twelve manufacturers," said Mr. Hollowell, "who signed the original contract and whose total shipments in 1916 amounted to over 50,000,000 face brick, have not as yet returned properly executed revised forms. Without considering these, we had, on December 7, the assured support of approximately 320,000,000. In addition to this, would like to explain that whole producing sections are waiting to sign up in the event one or another particular manufacturer will consent to co-operation. There are fully 150,000,000 shipments now involved by such situations in various producing districts."

In closing, the secretary called the attention of the members present to the eminently constructive work done during the past year by their president, George A. Bass. He paid Mr. Bass a sincere compliment for the admirable effort which he has put forth in behalf of the industry and felt the association owed him a debt of gratitude.

"The Excess Profits Provisions of the War Revenue Act," was the subject of an informal talk given by A. C. Ernst, managing partner of Ernst and Ernst, Cleveland, Ohio. "Many of you gentlemen," said Mr. Ernst, "may wonder why I am to address you on this subject. (Laughter.) But I think you will agree with me, when I am finished, that there are some things about this law which you do not know." And they did.

CITIES EXPERIENCE WITH GERMAN INDUSTRY

Mr. Ernst said that his company had a sort of paternal interest in the American Face Brick Association, since it had investigated the members' producing costs, and had formulated a uniform accounting system for the industry. He took occasion to touch upon association work in general before starting upon his announced subject, saying that his company had been called upon to do some investigating in Germany prior to the war, which had afforded him opportunity to know something of Teutonic business methods. Among other things, he said that he was very much surprised to learn that every German workman carried a memorandum book around with him, in which was recorded his industrial history. That is, every time he left the employ of a company, that fact was noted by his employer in the little memorandum book, together with the cause of his leaving. The advantage of such a record to the next employer is, of course, evident.

The Lobby of the French Lick Springs Hotel

Mr. Ernst went into some detail concerning association work in the German potash industry, which has also been investigated by his company, and amazed his auditors by the recitation of a few facts that demonstrated to some extent just how closely German manufacturers work and how great is the power of their organization.

Treading slowly thru the mazes of the excess profits provisions of the war revenue act, he pointed out here and there important facts which will have a bearing on the face brick industry. To the surprise of all, Mr. Ernst declared that the law did not exempt the 3½ per cent. Liberty bonds from a ten per cent. tax, when purchased by any business, and furthermore, that the treasury department had declared corporations or partnerships could not deduct gifts to the Red Cross, Y. M. C. A., and other similar causes, from the net income of a concern in determining the taxable amount. He also said that the government had already ruled that plant extensions, new equipment, etc., could not be purchased from profits, but must be considered as new capital. This, he said, hit many businesses very hard.

It would be impossible, in this brief report to enumerate all of the points to which Mr. Ernst called attention. Their name is legion. Suffice it to say that, when he got thru, everybody present knew a lot more about this law than they had ever known before.

SHOWS IMPORTANCE OF KNOWING TRUE COST

There is one point, however, in connection with cost accounting, that Mr. Ernst made, which is certainly worthy of mention. He said that the American Face Brick Association had not started a moment too soon in investigating their costs and formulating a uniform system of accounting. He pointed out the coal industry as a terrible example of what it means not to have adequate and accurate cost keeping facilities when the government comes around to investigate. "No one knows what industry the Federal Trade Commission will investigate next," said Mr. Ernst. "The government is buying all kinds of materials and commodities, and who can say that it will not investigate the face brick business. It is building up an organization to do this kind of work and it is an easy matter to turn to any industry and thoroly examine its cost of doing business."

COMMITTEE REPORTS

Reports of committees was the next order of business. The War Service Committee, of which Paul B. Belden, of the Belden Brick Co., Canton, Ohio, is chairman, was called upon. In the absence of Mr. Belden, H. E. Stringer, of the Hydraulic Brick Co., Washington, D. C., read the report. This committee has been doing some admirable work at the nation's capital and deserves increased support. It has represented the face brick industry in a number of difficult situations, for which Mr. Stringer deserves a great deal of credit. It has been on the job in the matter of emergency construction, and has called the attention of the quartermaster's department to the merits of brick as a building material time and again. This committee has also worked with the paving brick people to secure a consideration of specifications which would permit brick road construction at army cantonments.

The Cost Committee, headed by J. M. Adams, of the Ironclay Brick Co., Columbus, Ohio, also made a report, which was in substance the same as that contained in the secretary-treasurer's report.

At this point, the Executive Committee introduced a resolution dealing with standards and terminology, following which Dr. G. C. Mars, department of service, Hydraulic-Press Brick Co., St. Louis, Mo., presented his very fine paper on "Creating, or How to Create, New Markets for Face Brick." Dr. Mars' paper is reproduced in full in another part of this issue.

Unfinished business was the first matter to be considered. The resolution, pertaining to standards and terminology, introduced at the previous session by the executive committee, was re-read and then discussed. J. M. Adams, of the Ironclay Brick Co., Columbus, Ohio, suggested an amendment which was passed. The resolution in its final form read as follows:

WHEREAS, much confusion and trouble has long existed because of the different standards of size and terminology used in the face brick business of the country, and

WHEREAS, there is now a demand on the part of the architect, contractor and the brick manufacturer for the adoption of definite standards of size and terminology, now therefore be it:

RESOLVED, that the American Face Brick Association, representing approximately sixty-five per cent. of the entire production of face brick of the United States, being assembled in its annual convention at French Lick, Ind., December 13, 1917, hereby adopts the following standards and respectfully recommends them to all manufacturers and users of face brick.

RESOLVED, that the secretary of this association be instructed to give the widest publicity to the action herein contained, to the end that the architectural profession, the building trades and the brickmaking industry may be fully advised on the subject.

STANDARD SIZE

(A) The "standard" size of face brick shall be approximately as follows: 8 in. by 2¼ in. by 3¾ in.

(B) In referring to the size of a face brick, it is desirable that the three dimensions be stated in some definite order for the sake of clarity and uniformity. As the length and thickness of the brick are the dimensions most often appearing on the face of the finished wall, the length shall be stated first, the thickness second and the width last, thus 8 in. x 2¼ in. x 3¾ in.

(C) This "standard" size shall apply to brick burned to average hardness, with allowance for the usual commercial variations from such dimensions in brick harder burned or softer burned than the average.

STANDARD TERMINOLOGY

(A) Type or Method of Manufacture:

Stiff Mud Wire Cut—A brick made by wire cutting, into brick sized units, a column of stiff plastic clay expressed thru the die of an auger or plunger machine.

Stiff Mud Repressed—The above brick after being repressed in a press box.

Dry Pressed—A brick manufactured of finely ground, dampened clay, pressed in a press box.

Soft Mud—A brick made of clay mixed with water to a comparatively soft consistency and molded directly in a mold, usually without repressing.

(B) Texture:

Smooth—A brick of any of the above types and having a relatively smooth surface on its face and heads.

Sanded—A brick coated with sand.

Water Struck—A brick of the soft mud type molded in a mold dipped in water. This brick is often hand molded and in any case is irregular in size and surface.

Rough, Vertical Texture—A brick having an artificially roughened surface with ridges and valleys extending in vertical direction when the brick is laid horizontally in the wall. This brick is usually, but not necessarily, of the stiff mud wire cut type.

Rough, Horizontal Texture—A brick having an artificially

(*Continued on Page* 1142.)

JNO. M. STONER
New President

H. SERKOWICH
New Secretary

DEALERS ENTHUSIASTIC

Retailers of Face Building Brick Hold Helpful Meeting, Discussing Matters of Vital Importance to the Trade

THE SIXTH ANNUAL MEETING of the Face Brick Dealers Association of America, held at French Lick, December 13 and 14, was, without doubt, the most enthusiastic and encouraging ever yet held by that organization. Considering war conditions and the present state of business, it was very gratifying to note the large attendance which turned out to take part in the meetings.

President A. S. Reid, of Newark, called the first session to order on Wednesday morning, December 13. He spoke a word of welcome to the dealers present, expressing his regret at the absence of the secretary, Harold B. Holmes, of Detroit, who was detained by transportation delays, but who arrived on the scene of action very shortly after the meeting had opened. Mr. Holmes read the minutes of the meeting held at French Lick last December, also a statement showing the finances of the association to be in a healthy condition.

SECRETARY'S REPORT

After touching upon the present numerical standing of the membership in the association, Mr. Holmes said, in his report:

"We have handled one or two matters with the American Face Brick Association as follows:

"At the request of one of our members we took up with the secretary of the American Face Brick Association the question of whether the manufacturer's association had any uniform discount regulations covering the payment of accounts by dealers to manufacturers. We found that no definite action in this direction had been taken, altho the majority of the manufacturers have been working towards discount terms which were not in accordance with past custom. We sent out a bulletin on this matter to our members, receiving a considerable number of replies showing a wide variance of opinions. The secretary then asked the secretary of the American Face Brick Association to arrange for the appointment of a committee of three manufacturers who should consider this matter with a similar committee of three dealers, the object being to try to arrange uniform and satisfactory discount terms. The secretary of the American Face Brick Association reported later that he had taken the matter up with the executive committee and it had been considered inadvisable at this time for the manufacturers to appoint such a committee. No definite action, therefore, has been taken in regard to this matter.

WORK ON CONSOLIDATION

"Considerable discussion has been had by various members of our association relative to the advisability of a possible consolidation under some suitable form, of the dealers' and manufacturers' associations. This has been largely fostered by your secretary, who has felt that the best results would be obtained for the industry by an organization in which both the dealers and manufacturers would be working to a common point. This matter was handled by the secretary with our executive committee, by letter, but it was the judgment of some that it would not be advisable to push the matter definitely at this time. The secretary then had some correspondence on the subject with the secretary of the American Face Brick Association and with some of the directors of that association. The discussion on this subject, however, has not resulted in any definite action. During the summer, at which time the car situation was becoming acute, the secretary sent a bulletin to our members requesting that great care be exercised in ordering forward brick, to the end that every economy in the use of freight cars should be practiced. I believe our members have been alive to this situation and careful in watching this point."

DISCOUNT COMMITTEE APPOINTED

At this point the president selected a committee of three, consisting of Walter Pursell, Cincinnati; W. D. Clark, Buffalo, and A. E. Harding, Boston, Mass., to meet with a similar committee of manufacturers to discuss the discount question. A nominating committee was also appointed.

At the resumption of business on the afternoon of the 13th, the report of the nominating committee was heard. It recommended as the executive committee the following: J. W. Morrison, Detroit, W. H. Gifford, Chicago, and A. S. Reid, Newark, N. J.; for vice-presidents, A. E. Harding, Boston, F. B. Freeman, Pittsburgh, B. Mifflin Hood, Atlanta, Ga., F. N. Blanchard, Lincoln, Neb., James E. Morrisey, Cleveland, Ohio, E. F. Dartnell, Montreal, R. B. Howard, Chicago, A. E. Bradshaw, Indianapolis, Ind., John H. Donohue, Jr., St. Paul, Minn., Frank Schafer, Detroit, Mich., E. Kraatz, Milwaukee, Wis., Thos. Simms, Birmingham, Ala., Alfred Tyler, Baltimore, Md., D. W. Clark, Buffalo, N. Y., I. H. Tyler, Louisville, Ky., A. S. Reid, Newark, N. J., G. J. Grinnan, Norfolk, Va., Walter Jahncke, New Orleans, La.

The nominating committee, knowing of the ability of H. Serkowich, secretary of the Cincinnati Brick Club, and trade expansion man for the Queen City chamber of commerce, felt that the association could make no wiser choice for the office of secretary, and so recommended to the membership.

On account of the shortness of time, the committee was unable to determine upon a suitable candidate for the important office of president, leaving this matter open for action in the meeting.

JNO. M. STONER ELECTED PRESIDENT

The committee's report was accepted and a vote taken upon the various offices, resulting in the unanimous election of all nominees. It was moved by H. H. Frazer of Louisville, and seconded by Chas. Bonner of Chicago, that Jno. M. Stoner of Cincinnati be nominated for president. It was immediately moved that nominations be closed and upon a vote being taken Mr. Stoner was unanimously elected.

After the new officers had been escorted to their respective chairs, the outgoing officers were given a rising vote of thanks for the very fine work which they had done during the past year.

The new president, Mr. Stoner, in an introductory statement, said that he felt the association's first duty was to help America win the war. "We want to secure the personal interest of every member in the association," said Mr. Stoner. "The results that you get from your organization will, in a large measure, be dependent upon the extent to which you take an active part in the association's affairs, as it is absolutely impossible to get more out of an organization than you put into it.

"In accepting the office as president of your association, I do so with the expectation of receiving the active co-operation of every member, and will not hesitate, should occasion warrant, to call upon you for some real service." Mr. Stoner followed this up by saying: "This is *your* organization and not mine. I am only your servant, acting in such capacities as you direct."

NEW SPIRIT POSSESSES CONVENTION

These statements were received with great enthusiasm and started a new spirit in the meeting, the members pledging their hearty co-operation.

A general discussion ensued, in which it was suggested that a strong membership was highly desirable, and it was thought that great benefit could come out of the formation of divisions, such as Chicago, Cincinnati, Buffalo, Detroit, Cleveland, and so forth, all of which are well organized and well represented at the meeting.

Other important questions were brought up and freely discussed with much interest on the part of all present, such as the matter of discounts, the securing of the manufacturers' co-operation, extension of fire limits in various cities, general advertising and promotion.

In closing it might be said that the association was very fortunate in selecting for its president one who is so actively identified with a number of progressive clay products and building material concerns. Jno. M. Stoner is president of the Cincinnati Clay Products and Supply Co., president of the Blair Brick Company, vice-president of the Hyde Park Supply Co., and also vice-president of the Chrispin Lime and Cement Co.

A. F. B. A. CONVENTION ROSTER

The following were present at both the dealers' and manufacturers' meetings:

Joseph McKinney, Memphis, Tenn.
A. E. Huckins, Sheldon Brick & Supply Co., Champaign, Ill.
Thos. H. Simms, Brick Selling Co., Birmingham, Ala.
J. D. W. Hall, Twin City Brick Co., Des Moines, Ia.
Eben Rodgers, Alton Brick Co., Alton, Ill.
G. C. Mars, Hydraulic-Press Brick Co., St. Louis, Mo.
F. C. Aschmeyer, Hydraulic-Press Brick Co., St. Louis, Mo.
F. N. Blanchard, Neb. Material Co., Lincoln, Neb.
J. N. Girard, Neb. Material Co., Lincoln, Neb.
J. W. Waugh, Poston Paving Brick Co., Crawfordsville, Ind.
H. E. Stringer, Hydraulic-Press Brick Co., Washington, D. C.
A. B. Lyon, Hydraulic-Press Brick Co., Washington, D. C.
C. E. McCammon, L. H. McCammon Bros., Cincinnati, Ohio.
B. W. Ballou, Kansas Buff Brick Co., Buffville, Kan.
Ralph Simpkins, Hydraulic-Press Brick Co., Philadelphia, Pa.
P. A. Nutter, Adams Clay Products Co., Martinsville, Ind.
R. R. Colburn, Colburn & Murray, Minneapolis, Minn.
John Andres, Standard Brick Co., Evansville, Ind.
H. C. Kleymeyer, Standard Brick Co., Evansville, Ind.
J. F. Anderle, Dayton, Ohio.
A. E. Harding, Waldo Bros., Boston, Mass.
J. B. Nicholson, Toronto Fire Clay Co., Steubenville, Ohio.
H. D. Lounsbury, Fredenburg & Lounsbury, New York City.
Theo. A. Randall, Secy., N. B. M. A., Indianapolis, Ind.
J. C. Hale, Postex Brick Co., Springfield, Ill.
E. H. Moellering, Wm. Moellering's Sons, Ft. Wayne, Ind.
A. J. Rowell, Wm. Moellering's Sons, Ft. Wayne, Ind.
F. G. Banker, Brooklyn Brick Co., Indianapolis, Ind.
N. R. McKown, Brooklyn Brick Co., Greenfield, Ind.
R. L. Findlay, Hay-Walker Brick Co., New York N. Y.
A. A. Ayers, Hay-Walker Brick Co., New York, N. Y.

(*Continued on Page* 1151)

ENLIST *for* SERVICE

Says President George A. Bass, of the American Face Brick Association, in Memorable Address, Touching Upon the Open Price Plan, Consolidation of Manufacturers and Dealers in One Association, the Fine Work of the Divisional Organizations, the Association's Promotion Plan, and the Matter of a Federalized Building Industry

THE CHIEF EXECUTIVE and legislative functions of this association have for their aim the cultivation of a sense of mutual confidence and loyal co-operation among its members.

The practical working power of the association lies in its board of directors, and the board, in addition to its executive and judicial duties, should develop and formulate the policy of the association for consideration at its annual meetings.

A year ago we adopted the principles of the "Open Price" policy, and your directors have chiefly been busy the past months in endeavoring to develop our first plan—intended to improve so far as possible our market conditions.

As you know, there was nothing involved other than the publication of wholesale prices. The plan has been successfully carried out, and altho it has undoubtedly raised the general level of our business, it has only partly eliminated the evil of price cutting.

Your quotation binders disclose all prices of all grades at all plants, but as yet we have made little progress in covering the retail markets. The ultimate selling policies are still largely controlled by others; our customers too frequently are non-consumers.

MORE CO-OPERATION NEEDED FROM DEALER

The service of the middle man is proper and essential, but it is not as yet sufficiently co-operative, and until we show greater interest in the ultimate selling price, there will never be price stability.

I do not wish to make undue criticism of the dealer—we are partly responsible—but, granted he has seemingly outtraded us, he needs stabilizing as much as we do. Whether they can agree on a uniform service charge or not, there should prevail an assurance that the service charge is both real and sufficient, and not simply a helpful contribution to a possible cement or drayage contract.

The New York dealers can have little in common with dealers in distant cities, but they are all equally and vitally interested with the manufacturers tributary to their various centers. This alone explains their presence in our meetings. If we can devise some methods of eliminating this trading feature between manufacturer and dealer, so that our interests become not mutual but identical, I then personally see no reason why both memberships should not be comprised in one association. As it is, welcome tho they be, there should be some better footing for their attendance. We should encourage open price dealers' associations.

Our most effective practical work has been done in our various division meetings. They are rapidly becoming genuinely constructive, and the association itself must bestir itself or lose their respect.

I have attended a number of these meetings myself, and to me, they have been most illuminating. Members first came with evidences of considerable curiosity and much suspicion, but they soon began to ask for more than we had to give.

There have been many exchanges on matters of common transportation questions, and better forms have been devised for safer sale and collection practices.

Brick have been standardized in size and grades, and new and better methods of distribution in territory without large centers have been developed.

Almost universally there is a published factory price, and a distant one by the simple addition of the freight and distribution service charge. The day is coming when we will the more intensively develop and exploit the markets in our immediate natural fields of operation, and look less longingly on the job in the town of our neighboring manufacturer.

From the divisions have come the suggestions that we maintain a general credit bureau, and plan to develop a service department with technical facilities for compiling relative competitive building costs, to determine that brick construction costs are not prohibitive.

From the divisions comes the plan for the promotion propaganda which is before you, and I trust it will have your earnest, favorable consideration.

GREAT CREDIT DUE DIVISION OFFICERS

Interest and suggestions have come in proportion as service has been rendered. Great credit is due the chairmen and secretaries of the different divisions for their conscientious and exacting service during this formative period.

In all this we have striven to avoid even the appearance of questionable agreements or understandings, but there is a growing respect for the man that makes a good product and is able to get a good and sufficient price for it. We have been criticized for ultra-conservatism and timidity on this question of scrupulously observing the anti-trust laws. A number of us, however, have paid substantial fees for opinions on these matters, and feel disposed to be guided by them.

In some quarters too there is criticism of the work accomplished by the association. Much is expected and relatively little contributed by those criticising. A useful association is always slow of development. Much patience must be exercised and a spirit of forbearance shown those found in occasional error and who are slow to develop the association point of view.

We are makers of products, for the most part, that are non-essential for the war, and both patriotism and self-interest should suggest radical curtailment in production. Whether the use of labor and materials is made impossible by regulation or not, our industry I think can be relied upon to bring itself into adjustment with the war needs of the country.

THERE IS NO BUILDING ASSOCIATION

We belong to the largest single industry in the country—a potential power of great influence—and yet there is no single association including all the varied lines involved in building construction.

All moves in Washington are usually preceded by published suggestions from the Chamber of Commerce or others, as to the probable necessity for government regulation under certain conditions due to the war.

There is a rumored suggestion that we are not in the preferred list, but whether we finally have utter stagnation in building or not should depend on positive necessity. If possible we all wish to retain some portion of our manufacturing organization as a nucleus for future operations (and incidentally enable us to pay needed taxes and subscriptions to the many and varied worthy war causes), and we should be allowed some portion of our requirements for labor and materials so long as possible.

But if the government actually needs our coal and our men, the non-essential brick plants should certainly close.

The building industry might well be represented in Washington, not for the purpose of selfishly influencing government action, but that we may have direct information as to what the actual and real necessities may be. The government is not predisposed against the building business, nor have we reason to question its motive, but it is apt to do that which will yield sure results with the greatest ease.

We might well be better organized for purposes of conference and co-operation, that we may be assured our industry is not unnecessarily discriminated against. We should probably not take the initiative to bring the various lines in the industry together, but should certainly join any such movement.

Generally, our business has suffered and been adversely affected by all the rapidly changing conditions since early spring. We have contended with strikes, labor shortage, curtailed production, and all the hazards accompanying uncertain, insufficient transportation service, and have seen all costs in all departments, increase tremendously.

ASSOCIATION THE "ONE BEST BET"

That we have so far survived and are here is, I believe, due to the beneficial, helpful influence of the association. It involves your one best possible chance to survive this frightfully chaotic time.

It is necessary however that your officers have the co-operative help of all. A few have given needed service most freely, and the many, have been content that they should. What we need is active, universal, association service.

For almost five years building construction has been below normal. The surveys made of housing conditions in most localities show great need for new construction, and while we are adversely suffering now, few industries give such great promise of growth and prosperity when the world again returns to peaceful pursuits.

Enlist for service then, and do your utmost to co-operate with your fellow manufacturers and allied agents and dealers, in whatever division you may be, that there may be no just criticism of your attitude anywhere. What is good for one is good for all. Seek not to eliminate anybody, but strive to win confidence, to the end that competition may not involve either price cutting or unfair methods, as fair dealing, involving the chivalrous spirit of "give and take" will, with certainty, add much, both to your pleasure and profit.

GOTHAM STACKS WINTER BRICK

EVIDENCES were found in many quarters last week showing that the building material and contracting interests, as well as architects are now thoroly alive to the possibilities of a future building market of considerable proportions, says The Dow Service Daily Building Reports.

The first notable indication of the general awakening to the changed conditions came in the form of a sudden activity among building material dealers to stack common brick for winter requirements. The wholesole market reported an interest in brick prices quite unexpected and in consequence the price level of $8 to $8.25 for the best grades at wholesale docks and there was even a slight change in pressure on the $7.75 prices on "off loads" or brick of slightly inferior quality. Furthermore there were 25 barges reported sold, or 10,000,000 in the week closing Friday night. There were 31 barge loads in the market, or 12,400,000 Saturday morning with nine reported en route.

To accentuate the sudden tenseness in the market and the low stocks held in dealers hands here at present the snow storm promised to thicken the water so that, if followed by a cold snap, navigation would be closed, thus shutting off supplies for the time being.

Government interest in the building material supply situation in the East became evident on Thursday when inquiries were received from a special investigator sent on from Washington to determine just how the government would find conditions of building material supply. Particular interest was centered in lines outside of the metal department, which was said by the investigator to be sufficient to meet any requirement the government may create.

In this connection plans are now under way and an organization is in process of formation to assist the government in making sure of building materials, labor trucking, transportation, lighterage, engineering or architectural co-operation for what ever emergency that may arise and plans are now on foot to duplicate these emergency boards in every city in the United States where government war requirements are likely to demand great quantities of available supplies of materials.

TERRA COTTA DEMAND INCREASING

There are evidences of a concentration of building effort in various communities thru private capital to help the government solve the housing problems of several districts where skilled workers are already congregating. Some companies are making arrangements to so assemble their available supplies as to have them in ample volume and condition for prompt call.

Facts are to be collated in line with the report to December 1 of the National Architectural Terra Cotta Society, of which William H. Powell, president of the Atlantic Terra Cotta, is president, and Arthur B. Pendleton, secretary, which says that "the architectural terra cotta situation as reported by the National Terra Cotta Association to December 1, while showing no improvement in total business, indicates a somewhat larger proportionate demand than usual for the material. That is to say, such buildings as are now being erected of the class where terra cotta can be utilized, are using more of it than ever before. An important factor in favor of the material is that a large tonnage is manufactured in the metropolitan district, thus obviating any possible question of delay in transportation. Prices for architectural terra cotta remain about stationary, no advance having been noted in the last two or three months."

Price changes in the building material market are few. The whole building trade seems to be following the attitude of holding their prices as near to present levels as possible so as to give all prospective builders every advantage of getting into the market early.

◆ ◆ ◆

Podolsky Says Goodbye to Brick Industry

An announcement of much interest to face brick manufacturers and dealers is that Harry C. Podolsky has severed his connection with the Bonner and Marshall Brick Co., of Chicago, Ill., of which he has been general manager for the past eleven years, to become affiliated with the Signode System Inc., manufacturers of metal box strapping. Mr. Podolsky will be the New York representative of the Signode System Inc., and in all probability he will locate permanently in that metropolis.

HARRY C. JOSEPH

Another item of considerable interest is that not only has he changed his business connections but he has also legally adopted a new name, and will be known in the future as Harry C. Joseph. From records which have been discovered by Mr. Podolsky, it has been ascertained that the latter is his true name.

The Chicago Face Brick Association, of which Mr. Podolsky has been an active and aggressive member since its formation, has tendered him a resolution of gratitude for the constructive work which he has accomplished and the help which he has given to the edification of the face brick industry in Chicago. The strong ties of friendship which have been knit over more than a decade between Mr. Joseph and his colleagues (as brick dealers in Chicago really are) make the parting one of feeling. The best wishes for success and continued prosperity go with Mr. Joseph into his new field.

Paving Brick Makers In Washington

With a view toward getting real action looking to the improvement of the transportation facilities of the country, and particularly in Ohio, where railroad conditions are claimed to be unusually bad, representatives of the National Paving Brick Manufacturers' Association and the Good Roads Association, have gone to Washington, to confer with government officials.

The paving brick industry was represented by the committees on governmental relations and of which C. C. Blair, president of the N. P. B. M. A., is chairman. Others on this committee are: Will P. Blair, secretary of the N. P. B. M. A.; W. G. D. Orr; J. W. Sibley; A. L. Schultis, and R. T. Hutchins.

Co-operating with this group is the committee on National Affairs, of the Ohio Good Roads Association. On the trip to the capital both bodies attended the meeting of the Association of State Highway Officials, held in Richmond, Va., December 3-5. Representatives of the good roads federation included W. A. Alsdorf, W. P. Blair, R. H. Hughes, A. P. Sandles, and S. M. Williams. The members of the paving brick committee were appointed at the convention in Cleveland last month.

⁂

Chicago Ceramic Section Plans Meeting

The following program is announced for the December 29 meeting of the Chicago Section of the American Ceramic Society which is to be held at the Fort Dearborn Hotel, in Chicago:

1. A Review of Recent Ceramic Literature, by Professor C. W. Parmelee, University of Illinois.
2. The Fitting of Enamels to Metals, by R. R. Danielson, ceramic chemist, Royal Enameling Co.
3. Then What? by W. D. Gates, president, American Terra Cotta & Ceramic Co.

It is also hoped to have present at this meeting, A. De Gallaix, a former Belgian manufacturer of clay products whose factory was destroyed in the first days of the war. He has had considerable experience with glazes, stoneware and graphite crucibles and should prove to be very interesting.

The meeting will start with a luncheon at 1:00 o'clock. By special arrangement, good eats will be served at seventy-five cents a plate. Every ceramist in Illinois, Indiana and Wisconsin is not only urged to give his full support in making this meeting a huge success, but is also expected to bring with him a prospective member.

⁂

The large pottery plants at Evansville, Ind., have been doing a nice business during the past month and most of the factories have been operated on full time since the recent strike. The pottery manufacturers have been handicapped some by the car shortage and little relief is anticipated in the near future.

BUILDING SUCCESS UPON *the* ASHES *of* FAILURE

For a Decade the Grim Spectre of Failure Haunted the Morton (Minn.) Clay Works. By Capable and Judicious Management, in One Year the Unsavory History of the Past Has Been Swept Aside and in Its Place Has Been Written in Capital Letters, "SUCCESS."

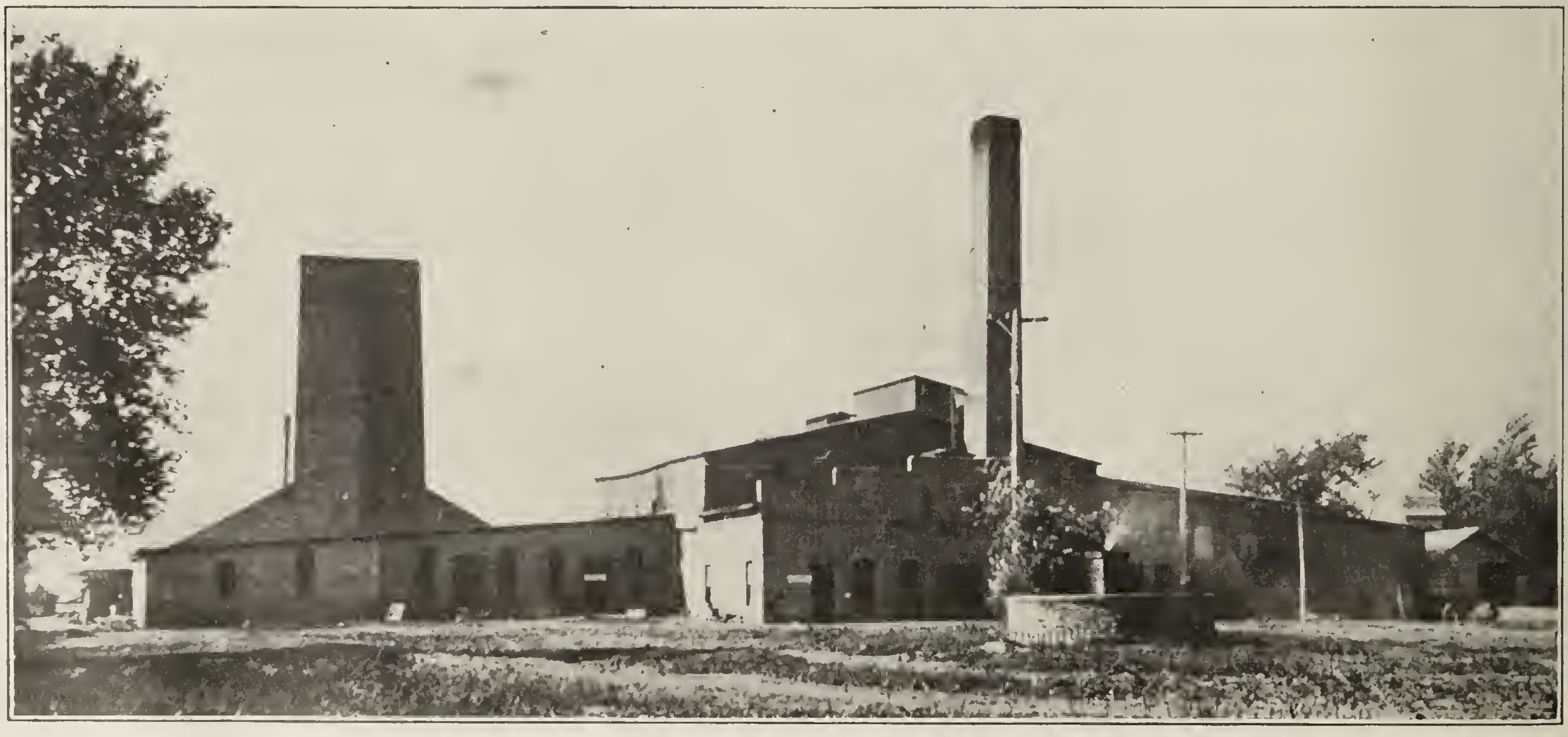
MECHANICALLY AND FINANCIALLY from the day it started ten years ago until the spring of 1917 the brick and tile factory at Morton, Minn., representing an investment of more than $100,000, had been a dismal and absolute failure. Before that time fairly good brick were made from the local clay by the soft-mud process, and a satisfactory profit realized. But from the very inception of the new and larger company, which was to manufacture clay products on a larger scale, "failure" seemed to be irresistible—it could not be deserted nor shaken off.

But by the ingenuity and hard work of two men in whose vocabulary there was no such word as "failure," all this has been changed in the past year and in the place of a rundown, inefficiently operated plant, there stands today a comparatively modern factory, producing a large amount of ware and earning a good dividend for the stockholders. The outstanding feature of the rehabilitation of the Morton Clay Works is that practically no expenditure whatsoever was made for new equipment and machinery; the men who took the enterprise as a floundering, shaky institution and placed it upon a solid, firm basis did so largely with the machinery and equipment already on hand.

The Morton plant was known to the clay products fraternity of the Northwest as an "impossible" proposition. Thruout 1916 it lay idle—not a wheel turned, and, furthermore, not a party could be found to touch it. During the years since it was started, manager after manager had been employed—men with records of success in other plants in different parts of the country. Seemingly, they have been given all they asked for in the way of new equipment; and the grounds and plant itself were running over with discarded equipment which different managers had thrown aside and replaced in an effort to make a go of it. Working capital was not stinted, but each new attempt at operation had ended as before—in disaster and despair.

BREAKAGE HIGH IN DRYER AND KILNS

Mechanical difficulties would not allow continuous operation. The dryers produced more cracked ware than sound



For More than a Year, the Machine Room of the Morton Clay Works' Plant Offered the Most Hospitable and Comfortable of Housing Places for the Watchman's Set of Prize Porkers. That was Before the Rehabilitation. Now the Plant Is Turning Out a Good Product at a High Rate, and Getting a Profit on What It Sells.

You Cannot See Any Smoke Drifting Skyward From the Above Chimneys, Altho Two of the Kilns Shown Are Under Full Fire. It Is Just an Example of the Kind of Management That Placed the Company Upon Its Feet After It Had Been Floundering for Ten Years.

and the percentage of failure in the kilns was also very high. A large portion of the product which had withstood the attacks of the dryer and kilns satisfactorily broke down in shipment and in handling; and the trade was so skeptical of Morton quality that it was with difficulty that the small percentage of really good ware could be sold.

This was a fine place for quitters to quit, but the Morton Clay Works, with unswerving faith in the possibility of manufacturing a good product with the material on hand, determined to make at least one more effort before abandoning the plant. Elements of success were there if only a system of operation could be found that would bring them out. The clay itself was good, the richest market territory in the state lay all about Morton, from which, even under existing conditions, emanated a fairly good demand, and shipping facilities were excellent.

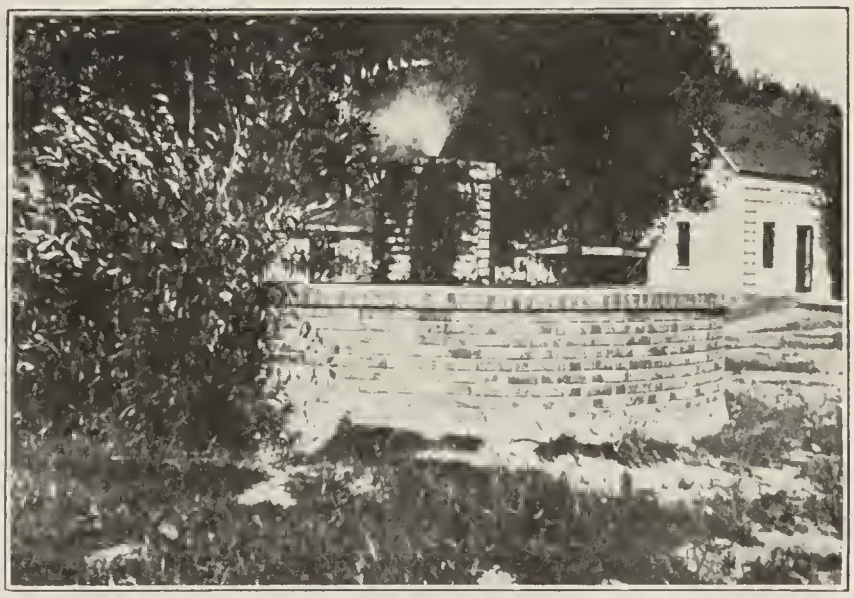
At intervals a kiln would be opened that had some fine strong ware in it, and by continually sorting this out and stocking it, a large stock of good, strong, common brick, as well as some fair drain tile, were piled in the yard at the beginning of 1917. True, it is hard to sell, but that was largely due to the failure of the previous output to give satisfaction and not due to defects in the material. It was a fair product; and proof of what might be done.

"If some of it is good, why not all of it?" "If a small percentage comes thru the dryer and kilns without cracking, why not more of it?" "If machinery runs all right for a few hours, why not all the time?" These were the questions which the Morton Clay Works put to S. E. Cullum and W. B. Laughead, of Minneapolis, when appealing to these men to determine once and for all the possibility of successfully operating the Morton plant.

Being well equipped by training and experience for just that kind of work, Mr. Cullum set about to answer the questions. Aside from his qualifications as a machinery salesman and clay products manufacturer, his chief asset is a lively imagination that enables him to look around a problem and solve it by methods not put down in rule books. His record of successfully reconstructing a number of plants as badly off as the Morton factory serves as a testimonial to his ability. For years he was a successful machinery salesman and became well known to the industry as "the man who would rather show a plant owner how to get along with his old equipment than to sell him new machinery not absolutely required."

The first inspection of the Morton plant showed there was plenty of machinery, and much to spare on hand. There was in addition to two lines of stiff-mud equipment, a twelve-tunnel radiated heat dryer, a dry floor 60x80 feet with steam pipes under a cement floor, and six round down-draft kilns. No inventory could show its shocking conditions of neglect. During the year the plant was shut down, the watchman had gone in for hog raising on a large scale, using the machine room and dryers to house his pet porkers and from all appearances these quarters had not been cleaned out during the period of pig habitation. Scrapped machinery, broken lumber, and a mountain of waste clay filled the buildings. It was a dismal prospect, but judgment was not to be passed upon appearance.

Upon completing the initial survey, Mr. Cullum's first work was to build a miniature dryer and test kiln that would duplicate the working conditions in the units in the yard. A series of tests was made to determine the cause of excessive drying and kiln losses. When these troubles were located and their remedies worked out, the next task was to reconstruct the plant. Further tests were made with all kinds of mixtures, with the available clay, and it was found



This Attractive Fountain is Not a Luxury—It Is a Necessity. It Constitutes the Overflow Basin for the Water Piped From a Spring on the Hill, and It Is the Successor to An Ugly Stone Basin.

that anything from tile to fancy match safes and ornamental clay products could be made from the local material.

At this point, Mr. Laughead was called upon to assist in the rehabilitating process. Mr. Laughead, a designing engineer who had worked with Mr. Cullum on other projects, has the faculty for eliminating non-essentials and reducing every factor to its simplest form. Like Cullum, he has also given considerable attention to sales promotion and at the time the call for succor reached him, he had finished his second year's work on a campaign of educational advertising for one of the largest lumber manufacturing concerns in the country. This position he resigned to re-enter the engineering field at Morton.

After the equipment was sorted over, and the plan drawn for the new plant, the following surplus machinery was set aside or disposed of: One car load of junked equipment, sold as scrap at war prices, and a complete line of stiff mud machinery, including a crusher, auger machine, automatic cutter, two elevators, a repress, and two conveyors. In addition, a separate crushing plant for fire clay was built, a crusher, screen, elevator, and a gasoline engine being reclaimed from the junk pile. This crushing plant has proved of great service.

DRYER LABOR AND LOSS CUT

The radiated heat dryer was repaired at small expense. Formerly, it had always been fired heavily; a day and night fireman had been employed solely for the purpose of tending to this one piece of equipment, and they filled the fire boxes two or three or even four times an hour. The losses in cracked ware were very high.

After the changes were made, however, the dryer was run on low fire, and no firemen were required to give it their personal attention as the burners found ample time to fire it lightly every two or three hours. Cracked blocks and drain tile now run about one-half to one per cent. and the drying time has been greatly reduced.

Practically all of the ware put on the hot floors in times gone by had cracked. By putting in a shelving system the capacity has been increased three hundred per cent. and cracking all but entirely eliminated—and this after many local authorities claimed that the shelving system could not but prove a failure.

The old method of molding was to take the clay wet from the pit, run it thru a roll crusher into a pugmill, and from the pugmill into the auger machine. As often occurs under conditions of this kind there was a great deal of trouble experienced with lamination and scum. Since the clay was not tempered there was no control over the moisture content of the clay column. Vegetation often was gathered up with the clay and sent thru the machinery, causing considerable trouble at the cutter. The pugmill shaft was found to be wound around with roots and fibre in a solid mass a foot thick.

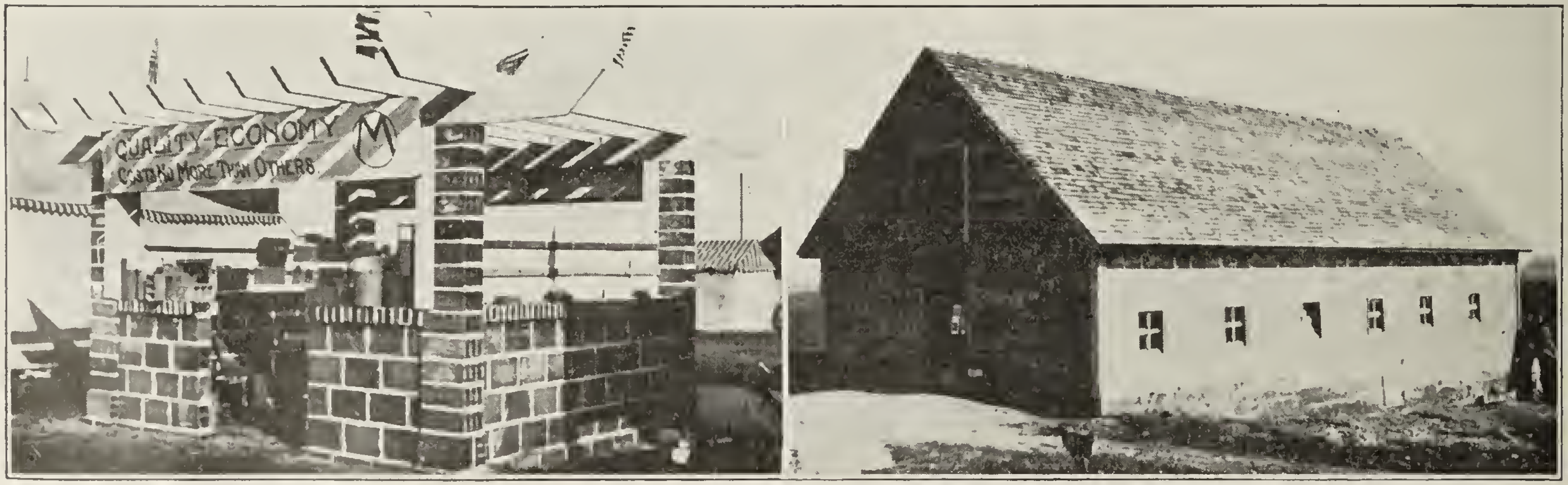
Now, under the new regime, the clay is cured by storage, put thru a dry pan, elevated, and screened into a storage bin on the second floor. This bin is divided for clay and grog. The measuring spouts descend to the pugmill and the mixture entering there is controlled by the spout gates.

A Faint Heart Would Have Quailed at This Outlook, Coming Upon the Heels of Long, Hard Labor to Make a Go of a Worn Out Plant.

Moisture is added by a perforated pipe which keeps the moisture content of the clay column constant at all times. By this method a cure has been effected for all of the troubles heretofore experienced in the machine room. Lamination is not apparent in the finished ware, and masons who use the blocks remark on the clear, straight breaks they can cut on the new product.

New fire boxes of Mr. Cullum's design were put into the kilns, and the flues repaired. By the new system of firing, the kiln losses have been practically eliminated and a fine hard burned product, uniform from top to bottom of the kiln, is the regular output.

One of the most notable changes effected was that of the attitude of the trade toward the ware. As was stated, in the spring of 1917 the yard was stocked up with brick, tile, and blocks made during the years the plant had been operated—but that were never sold. In addition to selling all the ware made this summer the new Morton Clay Works de-



One of the Big Things Which the Morton Clay Works Has Done in the Last Year Is to Interest the Farmers in Redwood County In Hollow Tile Construction for Farm Buildings. The Picture on the Left Shows Its Exhibit at the Redwood County Fair, and That on the Right Illustrates the First Hollow Tile Hog House to Go Up in That County.

veloped a market for practically all of the old material on the yard. In one season the old stigma on the quality of Morton ware has been removed; nothing but praise is now heard from the buyers of the material. The responsiveness of the market to a well made product has been phenomenal.

A definite sales policy was formulated and a campaign laid out before a piece of ware was sold from the company's plant. In the first place, a trade mark was adopted and all sales talk and advertising has been done on the basis of the economy of using high grade "M" ware. Building advice was given prospective builders by Mr. Laughead, who has done constructional work with hollow tile and every effort has been put forth to reduce building costs by the use of clay products.

The first hollow tile building in that part of the country was erected this season and so many farmers of the surrounding territory have adopted this type of construction that the demand for hollow ware is rapidly exceeding the supply. These sales are not being made by cutting prices to obtain business, but by boldly talking quality and suppiying that quality, and establishing a price standard and sticking to it.

DEVELOPING A MARKET FOR HOLLOW TILE

Another change to be noted was that of the local building conditions. Since the burned clay product in that vicinity had fallen below standard, the community had very generally reverted to the use of cement blocks. Now, the local builders are enthusiastic in their support of burned clay hollow building tile for constructional purposes, and are giving expression to that support in the number of new hollow tile farm buildings which they are constructing. Hollow tile exhibits held at the county fairs of Renville and Redwood counties by the Morton Clay Works undoubtedly did much to advance the cause of hollow building tile.

Locally, one of the big improvements to the plant and one which has attracted widespread attention from farmers and auto tourists who pass by the factory, is its changed outward appearance. From a decidedly unattractive place it has been transformed into one of interest, not by the lavish expenditure of money on unnecessary decorations, but by adding a touch of beauty to those things required by necessity. An attractive fountain, for instance, may be seen in the center of the plot immediately in front of the plant. Heretofore an unsightly circular stone tank occupied this site, being required as an overflow basin for water which is piped from a spring on the hill. A very attractive entrance gate has been built, not as a requisite—it is needed as a flood gate—and by combining beauty with utility there was undoubtedly created a thing of much advertising value for the Morton company.

FLOOD CRIPPLES PLANT

One of the greatest disappointments that could have followed in the wake of the progressive measures adopted in rehabilitating the plant and one which would have undoubtedly discouraged less optimistic and confident leaders, was the flood which swept over Morton this year. It came just as the plant was ready to start and for ten weeks it was impossible to turn a wheel. No drainage system had ever been provided for the elevator and dry pan pits, dryer tunnels and fire pits, nor the kiln tunnels. Ditches had to be dug and tile drains put in and cut into the pits thru holes drilled in the foundations. It was truly a heart breaker but, like all of the other obstacles which had to be overcome, the damage done was remedied and the recurrence of such a disaster prevented not only for this year but for every year. In addition to the drainage work done, dikes were built around the plant's entire site, to keep out the floods in the future.

Before closing this interesting story of succeeding in a struggle with failure, it might be well to point to the remarkable production records which have been made with an organization much smaller than that formerly employed under the old lack-of-system methods. The records show that the number of men employed was cut in half—and that the plant's output mounted to 1,000 six-inch tile an hour, the highest run in the plant's history. While the plant was being rebuilt from pit to kilns, time was found for the production and sale of more than had every been made and sold in a corresponding period before.

⁂

Pacific Coasters Express Confidence

Pacific Coast brick companies are trying to make survey of 1917 and the prospects for the year 1918. The general opinion is that while business is expected to fall off, possibly as much as 20 per cent., during the coming year, they feel that the record made in 1917, as a whole, has been quite satisfactory. Prices on common brick advanced to $10 per thousand, and at the time this advance was made the manufacturers expected a very successful year. However, the increases made in the price of fuel and the advances in the cost of labor made such inroads on the profits that it will be necessary for the manufacturers to make another advance in the price. It has therefore been decided to make the price of common brick $11 after the first of the year. The most successful manufacturers admit that the cost of making brick has increased at least $1.50 during the past year, and some claim a much higher figure. They all confess also that no one can foresee what the labor conditions next spring will be when the soft-mud yards desire to resume activities.

The future of the fuel situation is clearer as there seems no doubt that sufficient coal will be forthcoming provided the manufacturers are prepared to pay the price, but the increased demand for labor in other industries. especially those allied with the war, casts an ominous shadow upon prospects for 1918. The business in this territory is quite well scattered, the field of operation covering a radius of about 100 miles around the San Francisco bay. It is not to be expected that the decrease in business next year will be so severe, but each yard in this territory will perhaps get all the business it may desire under the conditions of operation anticipated. The fact that only a few million brick jobs are at present in sight does not disturb the manufacturer as very often five or six large projects will appear upon the horizon in a few days' time. It has been proved that this section of the country does not experience the great waves of prosperity that come to the eastern section, nor does it experience the waves of depression. Fluctuations in business are not so great nor so sudden, and relying on these features the brick men are not worrying over what the next year may bring forth.

The fire brick manufacturers are in much better position than the makers of common brick. Their product is used so much in the work now being prosecuted by the government that they have not had near the same difficulty in getting cars. Labor conditions oppress them somewhat, but with greater facilities of delivering their product they are able to meet these extra labor charges by increasing the price of brick. This action was taken on the first of the month and fire brick is now selling in this market at $35 instead of $32.50. That the government intends to keep these manufacturers in good humor is evidenced in a circular letter which is reported to give assurances that all obstacles which prevent the maximum production of fire brick will be set aside as much as possible.

OPEN PRICE PLAN *and the* LAW

"There Is No Objection to Manufacturers Distributing to Some Central Point Their Actual Experience in Sales, Both as to Quantity and Price, and if This Tends to Stabilize the Market, the Government Cannot Make any Complaint, and Will Not"

By Elmer H. Adams

Read at the Sixth Annual Meeting of the American Face Brick Association, French Lick, Ind., December 14.

I HAVE BEEN ASKED to address you gentlemen upon the topic of "The Open Price Plan and the Law." Your secretary was kind enough to inform me that he chose this subject so that I would have an ample opportunity of discussing anything I desired and still comply with the terms of the subject.

Every time anybody mentions the Sherman Law there immediately flashes in our mind the word "Monopoly." A monopoly is not necessarily within the language of the Sherman Law and the Sherman Law does not necessarily prohibit monopolies. There are numerous instances in the world where persons have a monopoly and still they are not subject to the penalties of the Sherman Act. Each one of you gentlemen possess a monopoly of the particular face brick which you manufacture and this is true not only of the product which you manufacture, but every person owning a copyright or a patent possesses a monopoly which it may be admitted they have a right to under the law, but outside of this there are specialties of various kinds manufactured in which a monopoly exists.

WHAT THE SHERMAN ACT REALLY PROHIBITS

The Sherman Act is not therefore aimed so much at monopolies as it is at illegal combinations and conspiracies in restraint of trade or commerce. The language of the Sherman Act which defines what is an illegal combination or restraint of trades, uses this language—"Combination in the form of trusts or otherwise in restraint of trade or commerce among the several states or with foreign nations is hereby declared to be illegal. Any person who shall make any such contract or engage in any such combination or conspiracy shall be guilty of misdemeanor." The second section of this act provides "Every person who shall monopolize or attempt to monopolize or combine or conspire with any other person or persons to monopolize any part of the trade or commerce among the several states, shall be deemed guilty of misdemeanor."

The leading case prior to the Standard Oil litigation was that of the Addyston Pipe & Steel Company in which the United States Supreme Court laid down the following rules:

"An agreement or combination between corporations engaged in the manufacture, sale, and transportation of iron pipe, under which they enter into public bidding for contracts, not in truth as competitors, but under an arrangement which eliminates all competition between them for the contract, and permits one of their number to make his own bid, while the others, are required to bid over him, is in violation of the anti-trust act of Congress, passed July 2, 1890, so far as it applies to sales for delivery beyond the state in which the sale is made.

A combination may illegally restrain trade by preventing competition for contracts and enhancing prices, altho it does not prevent the letting of any particular contract.

A combination to restrain competition in proposals for contracts for the sale of certain articles which are to be delivered in the state in which some of the parties to the combination reside and carry on business is not, so far as those members are concerned, in violation of the anti-trust law of Congress, altho the contract may be awarded to some party outside the state as the lowest bidder."

FIRST MONOPOLY

So that we might better have an understanding of the evolution of combination laws and litigation, it might be interesting to tell you that the first monopoly in the history of the world of which we have any record occurred in the early history of England. It appears from the records which are now available that England was short of wheat and that a merchantman, discovering this to be the case, having a large cargo of wheat on board his vessel, sailed his vessel out to sea and proceeded to sail around the island day after day, refusing to land or sell his wheat until the price which he demanded should be paid; there being a shortage of wheat and he having all the available supply a monopoly was immediately created in wheat. The government, thru a proclamation to the king, seized his wheat without paying him any compensation therefor and locked the merchantman up in jail as a penalty for his attempting to create a monopoly. Thereupon, there grew up in England a practice of granting to individuals a monopoly in various trades and industries. Special privileges were given to favored ones whereby they controlled all of the sales of certain products and to this day you will find certain tradespeople who advertise the fact that they have been appointed by the king to especially manufacture particular hats or coats or that they are appointed to furnish particular articles of merchandise.

MONOPOLIES IN FAVOR; AGAIN IN DISFAVOR

The pendulum of statutory enactment with respect to monopolies swings to and fro. One period of time you will find that the monopolies are very much in disfavor. Combination of interests are in disfavor and then the pendulum will swing the other way and combinations and monopolies are very much favored. Within a few years we have seen this change. In the administration of Roosevelt, Taft and the forepart of Wilson's administration, the Attorney General of the United States was prosecuting and persecuting every kind of any old combination, whereas today combinations are looked upon with favor. A few years ago a railroad pool would have stood about as much chance as a proverbial snowball, and a railroad pool was sought after by the railroad officials. Today, according to newspaper reports, the government is anxious for a railroad pool, but the railroad officials are against it. An absolute change in position.

When the Standard Oil Case came up for decisoin, the Supreme Court of the United States read into the Act what is commonly known as a rule of reason. The following rules were laid down:

RULE OF REASON

"Only undue restraint of interests or foreign trade or commerce are prohibited by the provisions of the act of July 2, 1890, P. 1, 2, declaring illegal every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of such trade or commerce, and making guilty of misdemeanor every person who shall monopolize or attempt to monopolize, or combine or conspire with any other person or persons to monopolize, any part of such trade or commerce.

The standard of reason which had theretofore been applied at the common law and in the United States in dealing with subjects of the character embraced by the prohibitions of the act of July 2, 1890, P 1, 2, against combinations in restraint of interstate or foreign trade or commerce, or monopolization or attempts to monopolize any part of such trade or commerce, was intended to be the measure used for the purpose of determining whether. in a given case, a particular act had, or had not brought about the wrong against which the statute provided."

PENALTIES OF SHERMAN LAW

It is believed at this time that the Government will be very slow to commence any additional prosecutions under the Sherman Act. The penalties of this act are three-fold:

1st. A bill for an injunction can be filed to restrain the further continuance of the combination.

2nd. Indictments can be had and parties can be punished criminally for violations.

3rd. Any person who shall be injured in his person or property by any other person or corporation by reason of anything forbidden or declared to be unlawful by the Sherman Act may sue in the United States courts and recover three-fold the damages sustained by him and costs and reasonable attorney's fees.

THE FEDERAL TRADE COMMISSION

Since the passage of the Sherman Act, there has been enacted the "Federal Trade Commission." This commission has the power upon complaint made, to determine whether persons or corporations are acting in combination in restraint of trade. The method pursued is by the aggrieved party filing a complaint with the commission and thereupon the commission enters an order requiring the respondents to reply and an issue is thus formed before the Federal Trade Commission. Hearings are had before the commission and the commission then determines whether in its opinion there is a violation of the Sherman Act, and if there is the commission enters an order upon the respondents to desist. They also have the right to recommend prosecution both upon the civil and criminal sides. Undoubtedly, if there was a flagrant case, I have no hesitation in saying that the commission might order criminal prosecution, but in the majority of instances, the cases are not flagrant violations but combination of companies seeking to better their conditions and the order to desist is entered and if there is a violation of the order to desist, of course prosecution would follow.

I believe that the government will pursue the method before the Federal Trade Commission, at least until the war is over, except in the most flagrant cases of violation.

EVERY COMBINATION NOT A VIOLATION

It is not every combination that is a violation of the Sherman Act. There is no question but that manufacturers have a right to have trade organizations; as a matter of fact government officials favor trade organizations organized upon the right lines. It has been repeatedly recommended by the trade commission that manufacturers get together and organize themselves so that they may, if possible, establish cost systems and distribute this information from one to the other.

It was the opinion of the former Chairman Hurley of the commission that a large percentage of manufacturers did not know what it cost them to produce their merchandise; that by reason of this failure to have accurate information as to costs, waste and extravagances were caused and also concerns would prove unsuccessful and not know why. Further, the moment that the manufacturer knows what it costs him to produce his merchandise, he is in a much better position to fix a price to the consumer.

GOVERNMENT FAVORS KNOWLEDGE OF COSTS

The government has never denied that the manufacturers were entitled to a fair profit, and it is maintained that only by knowing what it costs to manufacture the merchandise is it possible to ascertain what the fair profit is.

I do not believe that the government will ever prosecute any concern or any combination of concerns whose object it was to fix a uniform basis for ascertaining the cost of manufacturing articles.

Trade associations are also favored from a credit standpoint and there is no objection to information being distributed with respect to the credit standing of the consumers with whom these manufacturers deal. And again, this information is extremely important to the manufacturers because in my own experience I have known of one person going from one concern after another in the same line of business obtaining credit when such person was not entitled to credit from any of them.

PRICE FIXING FOOLISH

I could enumerate many items for which trade associations are organized. The principal thing which the government contends against is price fixing. The contention being that combinations cannot stifle competition by fixing a price for its commodity, so that any attempt to fix a price is declared to be unlawful and there cannot be any combination of circumstances used for the purpose of fixing prices in advance. The attempt at price fixing in advance is so utterly foolish in addition to being unlawful that it would seem as tho business men would not even attempt it, and in making this statement I make it from this standpoint.

The majority of prosecutions under the Sherman Act have been against large combinations such as the American Can Co., the United States Steel Corporation, Northern Pacific Securities Corporation, the meat packers in Chicago, and you can readily see that this was not a large group of firms or individuals attempting to get together to fix a price.

THE DIFFICULTY WITH PRICE FIXING

The difficulty with the price fixing is where there are twenty or thirty or forty firms, they all will get together and agree upon a price and before the ink is cold upon the price list or the members attending the meeting have had time to say good-bye, some one of the concerns has already started in to cut the price in order to get the business. The price is seldom, if ever, lived up to, and the result is immediately everyone is at outs with his neighbor, bitterness of feeling prevails, each man looks upon the other with suspicion and instead of there being a benefit from the attempt thus to fix the price, there is generally a detriment, so that in our judgment it is both illegal and unwise to attempt to enter into price agreements and should be avoided.

At this time the whole tendency of the government and of business interests is for the exchange of information of every kind and character between interests in the same line of business. Conservation is the real key-note. Waste is condemned. The distribution of any information which will tend to efficiency and conservation is commended and neglect in the distribution of information which tends towards efficiency and conservation is condemned. Especially is this true under the stress which the United States is in at this time.

WHAT MIGHT HAVE BEEN DONE

Do you really appreciate what a wonderful thing it would have been if all the different classes of industries of the United States had been so organized and the information possessed with respect to the equipment of the various units of that industry; its ability to manufacture its products; its ability to obtain supplies and labor; the actual cost of production and the availability with respect to the market, how easy it would have been for the government in this emergency to simply have gone to the secretaries of the various associations and immediately, without any delay, called upon such organizations to supply the government's necessities. And this is not all. Each concern would be entitled to a reasonable profit in the manufacture of its business.

We read every day in the newspapers about an attempt being made at Washingto ascertain what a fair profit is for a particular line of industry. How easy it would have been to have ascertained this if associations had been organized and had the facts already gathered upon which all costs could have been figured, investment figured and a fair profit arrived at.

OPEN PRICE PLAN LEGAL

Every manufacturer is entitled to know what his competitor obtains for his product. There is no objection to each concern furnishing to a central office the prices it obtains for its merchandise. It will be argued that this might tend towards fixing a price, but if it does, there can be no legal objection to it.

I certainly do not wish to sell my product for less than my neighbor sells his. I might be willing to cut the price a small percentage, but it is just as unfair to the manufacturer to have him in a position where he does not know what the market price of the article which he manufactures is. Therefore, in addition to the information which can be destributed, as we have heretofore stated, there is no objection to manufacturers distributing to some central point their actual experience in sales, both as to quantity and price, and if this tends to stabilize, the government cannot make any complaint *and will not.*

OPEN PRICE TENDS TOWARD EFFICIENCY

This is also important from another angle. The manufacturer who has been unfortunate enough not to have installed a cost system may wake up to the fact that somewhere along the line he is negligent and thru finding what his neighbors can sell the products for may cause him to investigate his own workshop and eliminate expensive ideas or extravagant ideas or waste or negligent or lack of efficiency. Efficiency is really the keynote, and when we use that word we must employ it both in the purchase of raw materials, the employment and handling of labor, the operation of the factory, the assembling of the product, and last, but not least, the sale and the credit extended in making the sale.

There, therefore, can be no valid objection to manufacturers getting together in associations, and thru joint effort so conduct their business, receiving full and free information which will tend to a greater efficiency and a fair return on their investment.

* * *

Pledges Allegiance to Brick Roads

"Our only regret is that we did not know enough to build all of our roads of wire-cut-lug brick, cement grouted, instead of only the ten miles that we have, and we certainly will not build another mile of road in the county of any other class of construction."

The above was a statement made recently by Chairman Moses Overstreet of the Orange County Board of County Commissioners to a committee of Tampa (Fla.) citizens who inspected the roads of the county recently to get first-hand information on the cost of construction, class of work, and the wearing results obtained. He further stated that since this class of road was built, which was three years ago, no item of expense has had to be charged against it save the reconstruction of a thirty-foot fill where a flood had swept thru and left the grouted brick road suspended intact and of such strength that a two-horse wagon drove over it. Altho the ten-mile stretch referred to has been in service for three years at a point where it is subjected to the heaviest traffic, its surface is still "as smooth as a billiard table," according to Chairman Overstreet.

* * *

Cincinnatians Entertain Delegates

That enthusiastic, full of "pep" organization known as the Cincinnati Brick Club has put it over again. Duplicating their stunt of last year the members cornered (or rather, couldn't run away from) a bunch of eastern delegates journeying to the fair climes of French Lick, Ind., for the big convention.

When they had the whole bunch corralled, they marched them off to see one of the big shows and after the theater party had finished, they showed them how to conduct a real local organization meeting by inviting the group into one of the business sessions of the Cincinnati Brick Club. The sentiment still prevails: It's a live bunch that inhabits that little ol' burgh of Cincinnati.

CASTING *of* HEAVY CLAY WARE

By the Casting Process, to the Development of Which the Necessities of War Have Given Great Impetus, Open Top Glass Pots Can Be Made Quicker, Cheaper and at Least as Dense as Those Formed by Hand, According to the Conclusions Reached by the Bureau of Standards from Exhaustive Tests.

By Frank H. Riddle, Cr. E.

Associate Ceramic Chemist, Bureau of Standards, Pittsburgh.
This Paper is Published by Permission of the Director
of the Bureau.

THE BUREAU OF STANDARDS in its manufacture of optical glass has found that proper pots are of considderal importance in the ultimate successful production.

The chief objection to the standard pots is their iron content. Altho this constituent is not high compared with other refractories, and entirely satisfactory for the ordinary types of glass, it is too high for use in the manufacture of optical glass.

This lack of purity has prompted the bureau to produce porcelain pots in which high grade white burning kaolins and grogs, together with the necessary amounts of pure ball clays, feldspar and flint, are used.

The somewhat lower plasticity of these bodies, as well as the necessity for obtaining pots as quickly as possible, made it advisable to try casting as well as several other methods of shaping. The porcelain bodies are also being made into pots by the usual hand-built method, showing that this method is entirely feasible, regardless of the lower plasticity. However, the hand building is much slower than casting.

Casting heavy clay products is not new, tho unusual in most countries, with the possible exception of Germany. After the outbreak of the war, the method was used more extensively, and has proved very successful when the body thicknesses is not too great. Where the walls are over an inch thick the method has not been used to any extent. One firm in the United States is successfully casting refractory slabs similar in shape to terra-cotta ashler pieces with one inch walls and made of a mixture containing 50 per cent. of 8-mesh grog. Fairly heavy pieces of electrical porcelain are also being cast.

The object of this paper is not so much to go into details of the principles of the casting processes as it is to describe the actual mechanical manipulations used in casting an open top glass pot with heavy walls. The thickest part of the pots in question is at the bottom, which is 3⅛ inches. The sides taper from 3 inches at the bottom up to 2 inches at the top.

The casting process, use of salts, possibilities of the use of vacuum or pressure, etc., are described by Bleininger,[1] McDougal,[2] and Shaw[3].

The low water content which should be used in casting slips and which is made possible by the use of alkaline salts makes the preparation of the slip a rather laborious task, as it is commonly practiced. A simpler method is being used successfully at the Bureau of Standards. Ball mills and an ordinary double blunger are used in the preparation. This method does not apply to the preparation of refined bodies for high fire chemical porcelain, etc.

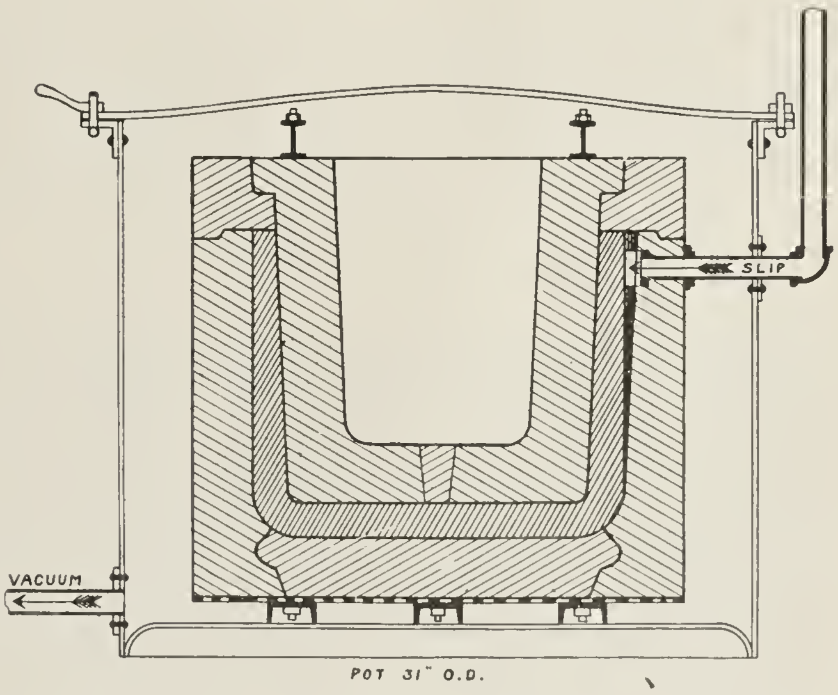


Fig. 1. Cross Section of Mold, Showing Method of Supplying Slip at the Top.

The formula of one mixture is as follows:

12-mesh kaolin grog	20 per cent. by weight
Kaolins	27 per cent. by weight
Ball clays	19 per cent. by weight
Flint	23 per cent. by weight
Feldspar	11 per cent. by weight
	100 per cent. by weight

All of the raw clays, are mixed with the total water and salts in a ball mill and ground together until a thin homogeneous slip is formed. This slip is then run over a strong electromagnet, the iron removed, and then pumped into a

---

[1] Paper read before the New Jersey Clay Workers' Association, 1914. Bureau of Standards Technologic Paper No. 51.
[2] Technologic Paper No. 126, Department of the Interior, 1916.
[3] Transactions of the American Ceramic Society, Vol. XV.

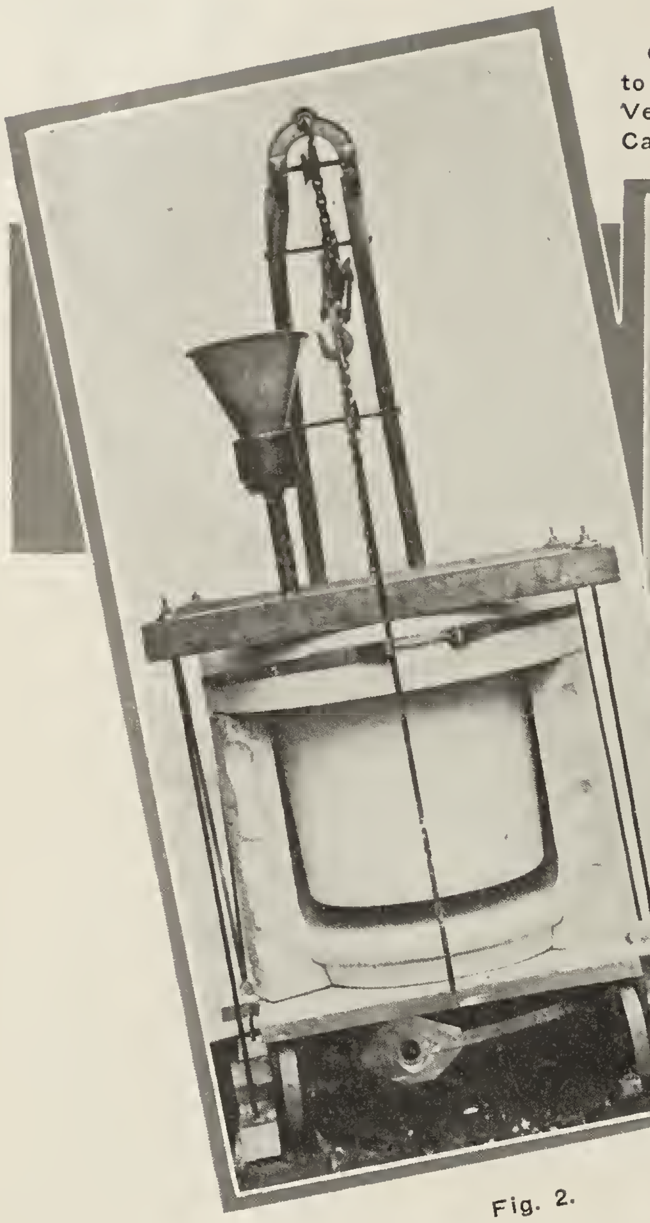
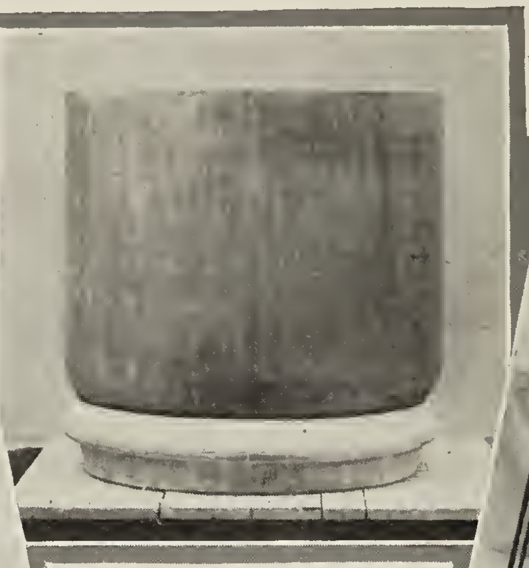


Fig. 2.



On the Left is Shown the Mold Ready to be Poured, with the Funnel Inserted Vertically. The Center Picture Shows a Cast Pot, Which After 28 Hours, Is In the

Fig. 3.

Same Condition As Is a Hand Mold Pot After Three Weeks. On the Right Is Shown Core Removed from the Mold.

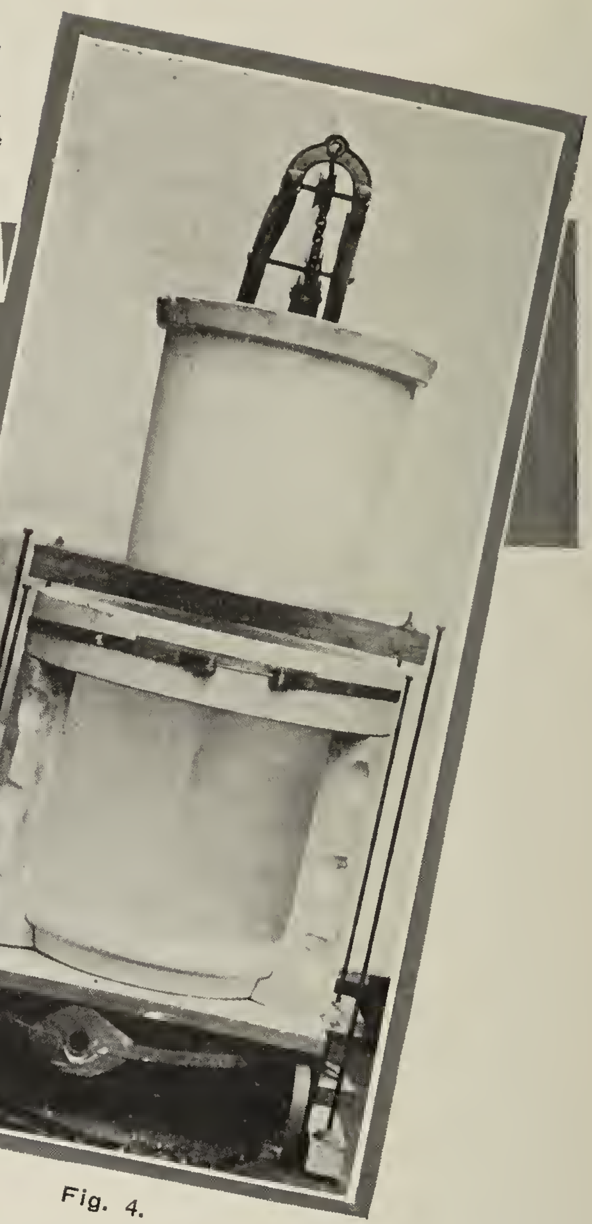


Fig. 4.

blunger where the flint and spar are added. Then the grog is introduced. The latter is put in last as it mixes easily and the slip becomes very thick.

If the grog and flint and spar are high in iron, they should be previously run over a dry magnetic separating machine. Both the dry and wet magnetic separators are now being manufactured at regular commercial machines.

The slip in question, when in proper condition for casting contains

22.6	per cent. of water by weight
77.4	per cent. of dry body
100.0	per cent.

The salts are equal parts of sodium carbonate and sodium silicate and are equal to .266 per cent. of the total body.

To show the effect of this addition of salts, a second batch of body was taken and mixed with the exact amount of water the previous batch had, but the salts were omitted. This body mixture is fairly stiff, in fact stiff enough for modelling. The low water content due to the action of the salts thus effects a considerable saving in molds and enables quicker drying to take place.

The cause of this peculiar effect of the salts, as is well known, is explained by colloidal chemistry. The slip is made up in part of very fine suspended particles, some of which are so minute that they show the peculiar phenomenon known as Brownian movement. These exceedingly small particles make up systems spoken of as suspension colloids, and possess electrical charges. In the case of clay and flint these charges are negative. When the sodium carbonate and sodium silicate salts are dissolved in water, the hydroxyl ions formed also carry negative charges. The similarly charged clay particles are repelled by these negative ions and the Brownian movement accelerated. This action is known as deflocculation. This increased dispersion of the particles due to their mutual repulsion reduces the viscosity of the system and hence lowers the water content for the same degree of consistency. If positively charged ions were added instead of the negative the reverse of deflocculation or coagulation results. This effect can be produced by the use of salts like alum or acids.

DETAILS OF THE MOLD

The design of the mold, of course, depends entirely upon the shape of the ware. There are a few points that must always be considered regardless of the shape, namely:

1. To make a solid piece of ware, the slip feed pipe must enter the mold where the ware is the heaviest. The reason for this is evident. If the slip enters the mold where the wall is thin the supply of slip will cease flowing to the heavier parts of the mold as soon as the thin part is cast solid. The thicker parts of the ware will then be hollow.

2. To make a well finished piece of ware, the slip should not be poured in from the top and allowed to splash. It should be fed in at the bottom and allowed to rise. This not only prevents splashing but also pushes all the air out ahead. To accomplish this feeding of the slip at the bottom, a sliding pipe should be used inside of the feed pipe so that it can be drawn out after the mold is filled, or else a rubber hose which can be handled in a similar manner.

3. After the mold is full of slip it should be fed from the top as more slip is required, due to absorption of water by the mold.

This will prevent an excessive settle of grog to the bottom of the mold. In case the grog does start to settle in the supply pipe, it will have a better chance of being caught in the thicker slip in the mold than it would have if it was fed down a supply pipe that entered the mold at the bottom.

4. At no time should the supply pipe be allowed to become empty and then suddenly refilled as air will be trapped and result in a blister in the body.

Fig. 1 shows the cross section of a mold and the method of supplying slip at the top. In order to have the supply channel as thick as the bottom, the side is gouged out to make the necessary cross section. This channel is shown better in Fig. 5, D2, which is a part of one of the master mold blocks.

The section drawing also shows the bottom part of the mold, or setter. This construction makes it very easy to take the mold apart and handle the ware off the platform. This is shown in Fig. 3. It is necessary to have more bottom parts but this makes it possible to keep the pots on the setter until they are dry enough to handle safely.

Fig. 2 shows a mold in position and ready for casting. The front third of the shell has been removed in the photograph so as to show the position of the core. Note the manner in which the mold is bolted together and to the iron platform on which it is standing. The upward pressure due to the head of the slip is very great in its total effect and the higher the supply funnel is above the mold, the greater it must, of course, be. For casting purposes the greater the pressure the more solid a body will be obtained. With the funnel three feet above the top of the mold the pressure is so great that it is necessary to use considerable care in bolting the mold together, especially across the center to hold the core rigidly. The ties are so arranged that the core can be released while the rest of the mold is bolted down to the base of the crane so that the mold is held rigid when the core is lifted out after the piece is cast. See Fig. 3.

CASTING THE MOLD

The slip, in a thoroly mixed condition, is poured into the mold thru the supply pipe. This pouring should be continuous, and at no time should the flow be broken as bubbles are apt to be formed. If the supply pipe goes into the mold vertically as in Fig. 2, the slip can be fed to the bottom first by inserting a pipe, of proper length and diameter, into the regular pipe and then removing it when the mold is full. While the ware is casting, the funnel should be kept full of slip, and refilled as required. The pot shown in Fig. 3 was cast for 26 hours before the absorption of slip ceased. It was allowed to stand for a couple of hours after removing the feed pipes and then the core was drawn out. Fig. 1 shows the core in cross section and the air inlet hole in the center. Fig. 4 shows the core removed from the mold. The rest of mold was also removed and the pot left standing on the bottom. As near as it is possible to judge, this pot, which was about 28 hours old, was in the same conditions as a hand built pot in three weeks after it is built. Allowing two weeks to build, it would mean a saving of at least a month.

Sufficient work has been done with the casting process to show that it is possible to make open glass pots successfully. They can be made cheaper, faster, and at least as dense as pots shaped by hand, and bodies lower in plasticity can be used. The cost of the molds is not great when a master mold is made so that several molds can be cast. Fig. 5 shows the various parts of the master mold used for this particular pot. Set A is the core block and case. Set B is the case for the bottom. Set C is the block and case for the top ring. A coddle has to be used with this set. Set D is the block and case for one of the three side pieces. It is also necessary to use a coddle with this set. Each set piece requires a set similar to this. In all, there are 24 separate pieces to this set of blocks and cases necessary for casting a complete mold but it can be done quickly when the parts are arranged with a convenient bench and proper plaster buckets are available.

With a properly arranged work room supplied with a trolley conveyor and chain block and convenient slip delivery pipes two men can cast, at a conservative estimate, ten pots a day, and take care of them. This would require twenty molds. An ordinary prong truck, similar to those used in sewer pipe shops, would make the handling of the pots easy.

The success we have had with glass pots leads us to believe that the casting process can be used much more extensively than is now the custom, and that its use will result in a more uniform product at a cheaper cost of production.

(*Continued on Page* 1152)

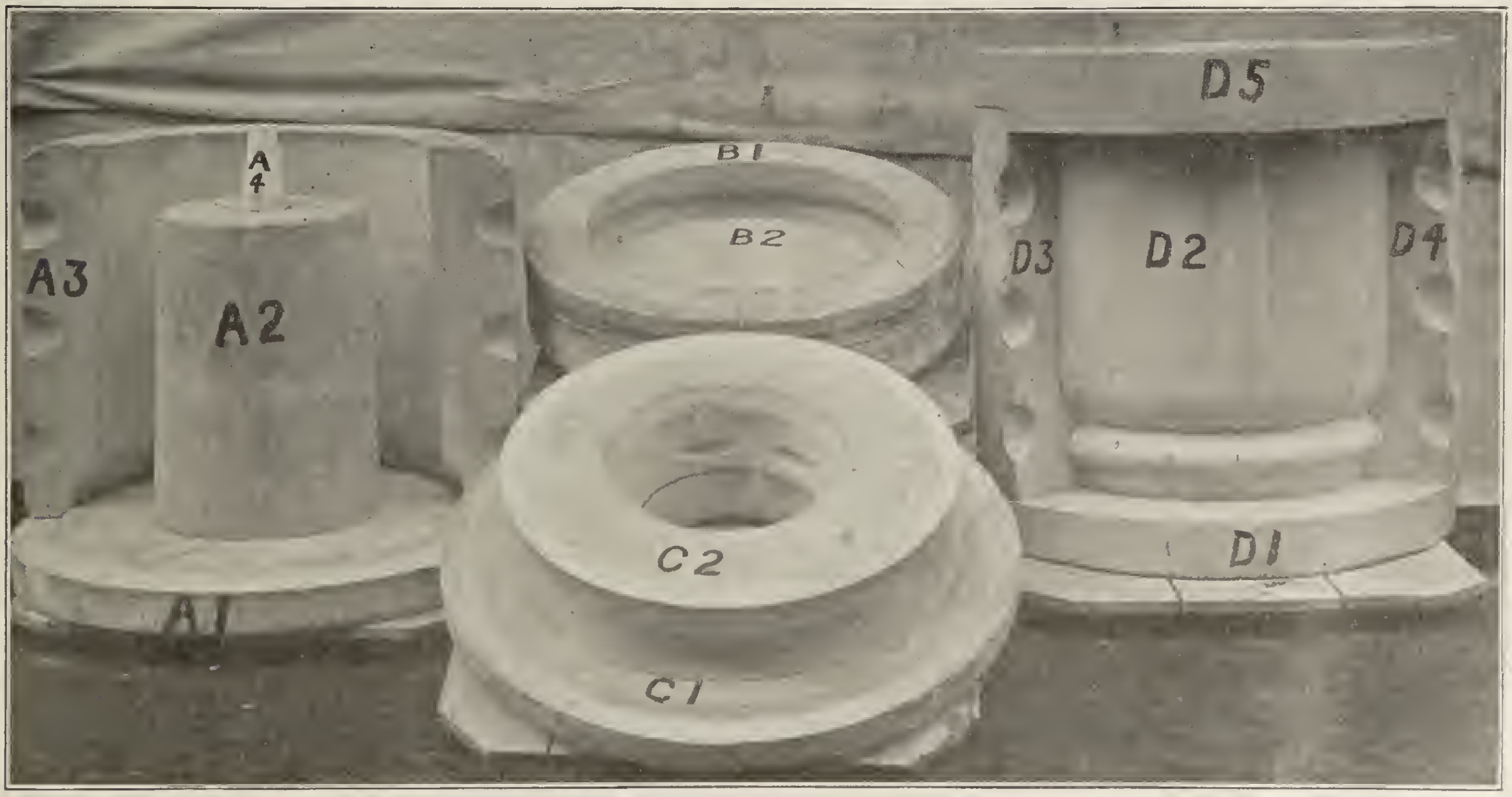


Fig. 5. Various Parts of a Mold.

HOW *to* CREATE NEW MARKETS *for* FACE BRICK

A Masterful Presentation of the Possibilities of a National Advertising and Promotion Campaign

By G. C. Mars

Department of Service, Hydraulic-Press Brick Co., St. Louis, Mo. Delivered Before the Sixth Annual Meeting of the American Face Brick Association, French Lick, Ind., December 14.

MR. PRESIDENT and Gentlemen of the Association, you will permit me to say at the very start that your primary purpose in making brick is to *sell* them. Manufacture has its complex and difficult problems that must be solved, such as, raw material, equipment, fuel, labor, depreciation, repairs, replacements, modernizing methods and designs, efficient cost accounting, and the like, but all this is of no avail unless you *sell* your product and sell it at such a price and in such quantities as will give you a fair profit, both for your capital risks and your personal efforts.

In fact, unless you sell in quantity you cannot be said to be selling at all in the modern sense of the term. For it is selling in quantity that constantly increases sales by enabling the manufacturer to improve his product, lower his costs. and thus appeal to a wider market.

PRODUCT MUST BE WIDELY KNOWN

But to sell in quantity, the product must be widely known and known so favorably as to be desired. Its merit wins for it a market by favorable rumor in the immediate vicinity of its manufacture and use, but to extend this narrow market, it is necessary to use some methods of exploitation that make known to the general buying public the preeminent value of the wares made for sale.

In the old days, the manufacturer himself took his goods to the town market or tramped the country from place to place sounding their praises and urging purchase. The vast developments of our industrial age have submerged this primitive method of increasing sales, and necessitates the creation of a new profession of salesmen who, as representatives of the manufacturer, carry the reputation of his product into far wider fields.

This method of personal salesmanship is good as far as it goes, but it utterly fails to exhaust the possibilities which are open to every manufacturer, of crying his wares in the universal market. The most subtle and powerful element in our modern industrial age is *printers' ink* because by it we appeal to the mind, convey instruction, arouse enthusiasm, and lead to action; and it is by printers' ink that we can blazon the merit of our wares on every white space in sight and address every man that can read and buy.

PUBLICITY WIDELY ACCEPTED BY MODERN BUSINESS

In a word, I have come to my subject, tho in a round about way, viz.: publicity for increasing the reputation and sale of manufactured products—the wide extended impersonal salesmanship of advertising. This method of extending the market for manufactured products has been widely accepted in the modern business world and is so obviously necessary for producing quantity sales that argument in its favor would seem to be superfluous. But we all often need to be reminded again and again of obvious things before we are willing to act. So that, before taking up the specific question of publicity for face brick, I shall, with your permission, venture to name very briefly some of the general principles that make advertising so powerful an aid in the selling game of today.

REACHING MILLIONS

Well, to begin with, if you would increase sales to gratify quantities, you must increase greatly the number of possible purchasers, and the only way to do so is thru judicious, consistent, and persistent advertising. There is no alternative. Your salesman can see and persuade ten people, your advertising can reach and persuade one hundred. It is true, generally speaking, that the personality and persuasiveness of your salesman possess more force than the advertising appeal. But, on the other hand, the printed page, especially in a favorite publication, carries an unconscious authority that no personal approach possesses. Besides, the printed page is concentrated, direct, and definitely to the point, while your salesman often scatters his fire and confuses the prospect by trying to say and do too much. The chief merit of the advertisement, however, is that it reaches not only very many more people than the salesman can reach, but gets where he could never go and addresses possible prospects he would never know about. For example, take a car card in the Chicago electric railway service, or a page in the *Saturday Evening Post.* How many people would see that car card every day and repeatedly see it, as a constant reminder during, let us say a month? The number of people would run to hundreds of thousands and the number of times seen into millions. Many, of course, would not be interested, but all those who were interested—and the number would be considerable—would have your message constantly, persistently, and silently pressed upon their attention. They couldn't get away from it. You have forced an audience and it only remains for you to make your appeal so attractive and convincing that your audience will be favorably impressed. Can any salesman or set of salesmen do the work of that car card in getting you and your product so well known to the public? Even with the people who are not going to buy, you will get the reputation of being an alert, progressive, business man, and that will be a benefit to you.

Or take the *Saturday Evening Post.* Over two million people buy and fully five million read that publication every week. Your advertisement, therefore, in the *Post* introduces you to those five million people at one-tenth of a cent per introduction and literally takes you into every home, rich or poor, into which the paper goes. True, the vast majority of these people care nothing about you or your product, but thousands of them *do*, and are ready for your appeal. Again it is up to you to make that appeal winning. Of those thousands your salesman would never think; and if he did, he could never get at them. Besides, as many of them already favored some competitive material, you are there on the job with your attractive appeal to intrude the merits of your product. That is, the advertisement automatically picks out all the people whom you ought to reach in behalf of your product as nothing else can.

A GOOD INTRODUCTION FOR YOUR SALESMEN

But in doing this, the advertisement, in the second place, makes you and your product generally known, and introduces your salesman to the public. It puts him in an easy position with every new prospect. A strange young man comes into your office and throws down on the desk a card bearing the device, Kodah, Pierce Arrow, Timkin Bearings, B. V. D. Don't you know him at once? Isn't the ice already broken? Is there need of any long preliminary explanation on his part to get your attention? If you want any of these products at all, you are ready at once to hear him and he is ready to sell you. No time is wasted. The introduction of the manufacturer's salesman to the general public thru advertising is one of its most subtle and meritorious uses. To become known, to get a reputation, to be read about in the papers, especially when you tell your own story in the most favorable light, opens up the greatest number of direct and easy paths for the salesman to tread.

In the third place, this sort of publicity advertising is a natural outcome of democratic institutions. In a democracy the people decide all questions of interest for themselves especially what they buy. Don't let anything stand between you and your great purchasing constituency. And when you fail to advertise you let indifference and ignorance block the wheels of your selling organization. People can't get, thru inspection or mental telepathy, an adequate knowledge of the excellent service you are ready and willing to offer them. You must tell them, you must carry your message to the people, and the only way to do so, as far as I know, is thru advertising.

"TAKE YOUR TROUBLES TO THE PUBLIC"

John Wanamaker, one of the oldest, most consistent, and most extensive advertisers in this country, says frankly: "Take your troubles to the public and they solve them." That is, the people are taken into your confidence, and rightly so, because they in the end pay all your bills and give you a profit. They are the voters whose support you must have if you would prosper in your business undertakings. Hence, as a manufacturer, go directly to the people with your appeal, they will feel complimented by it. They will acquire a sort of proprietary interest in you; and, if you live up to your promises, they will gladly pay you your price and become your friend. You will acquire that intangible but most valuable asset, their good-will. It is pretty hard to know just how to write it in your books, but it counts tremendously on the credit side of the Profit and Loss account. For this reason there is a growing number of merchants and manufacturers who no longer write down advertising costs as an expense, but put it along with additions and new equipments among capital accounts, where it really belongs. What value do you suppose the Eastman people put upon "Kodak," or the Proctor Gamble people on "Ivory, It Floats," or the National Biscuit people on "Uneeda?" It cost money to get these words current among the people, but you may be sure that that money cost has not just been brutally torn out of yearly profits by their respective owners. For in reality that money represents invested capital with great earning power. In modern business, the advertising appropriation should be made a fixed annual investment which nothing can displace.

The tremendous significance of natural publicity is that it capitalizes the confidence and good will of the people, and nothing else can surpass or even equal it in thus extending the market for any product of manufacture.

Once you grasp the democratic possibilities of advertising and get the people's confidence and good will, and you may snap your finger at individual opposition, however strong.

PUBLICITY'S REACTION ON THE ADVERTISER

Finally, on the general principles of advertising it must be said that not its least benefit is its reaction on the advertiser himself. Once gain a reputation for your product and service, once get the people's confidence and good will, and ever after you are obliged to make good. The consciousness that the people are expecting you to live up to your promises, stiffens up your entire sales organization by creating an idea to work to. There will be a constant influence bearing upon you to standardize, much to your own and your customers' benefit, both your manufacturing and merchandising activities.

So much for the advantages of advertising in general. How does it all bear on the A. F. B. A.? I would say emphatically that its bearing on your Association is that you get into the national lime light as soon as possible and stay there. It is time you were not only thinking and talking about it, but acting. Look at the advertising pages in the national publications and you will find yourself decidedly in the shadow, and a pretty dark shadow at that, while your competitors are decidedly in the spot light. People don't see you, but they very clearly see your rivals in the market. Besides, advertising has become so general that innumerable products are filling the pages of the national publications and crowding you entirely out of public attention. Tempting appeals are constantly being made to the purchasers' pocket book, and as you are out of sight you are out of mind.

When the average citizen is ready to buy a necessity or a luxury, thousands of things in the daily, weekly, and monthly press are clamoring for his attention and his money, and you are not there with even a whisper or a squeak that face brick is sometimes worth buying. Even if the prospective purchaser has decided to build a house or a store, you have not a word to say to him on the best all-around building material in the world; but literally scores *are* shouting at him for less worthy products for his purpose. People simply forget your existence.

BUILDING—A GREAT INDUSTRY

Building either for necessity or luxury, as you know, is one of the great industries of any country, running annually it is safe to say, to more than a billion dollars. Last year, the government reported building in fifty-one cities at an estimated cost of over 780 millions. Evidently this by no means represents all the building done annually in this country thruout its length and breadth. These fifty-one cities represent only 21,000,000 people or about one-fifth of the whole population.

Now the value of the total clay products in 1915 is put down at upwards of 163 millions, of which face brick represents from 6 to 6½ per cent, or let us say in round numbers ten or eleven millions of dollars. Put this ten or eleven millions over against the $101,756,000 of cement or $1,119,348 of lumber sold in the course of a year; and, while much lumber and cement can be used where face brick would not be possible, we must feel that we do not have our share of the building market, or that cement and lumber are being used where face brick belongs.

GET ONLY ONE-FIFTH OF POSSIBLE BUSINESS

Let us look at the matter in another way. Fifteen materials that go into building aggregated over two billions in 1914, according to the U. S. statistical abstract. This means, perhaps, a billion in new construction. The ten millions worth of face brick put into these houses means that we have got about one per cent. of the building material business. Should we get to furnish all these houses with face brick, we would have about 5 per cent. of the building material business, on the basis that 25,000 brick at $20 per thousand would be used in an average $15,000 or $20,000 house, in which the material would cost say $10,000. That is, we get only 1/5 of the total brick possibility. Of course, we could never get this total. but we ought to get more than 1/5 of it. Suppose we got 2/5 of it or two per cent. of the whole material cost. That would mean twenty millions instead of ten millions of business. In fact, we ought, at the lowest to get this two per cent. of the possible total of give. But in view of the preeminent value of face brick, both structurally and artistically, why shouldn't we get three-fifths of a possible total and bring our business up to three times its present size or $30,000,000? Could we only double our sales by a $200,000 annual publicity company, it would simply mean only a two per cent. burden on the increased sales.

I see no reason why we shouldn't; but I see a very good reason why we don't. It is simply because we have been asleep at the switch. It is because we have not been awake to modern methods of merchandising, of intensively cultivating our old markets or creating new ones.

There is a broad field represented by 5, of which we take 1/5. We go along in the same old fashioned way and let business float to us. The population increases, the number of our competitors increase, and we just jog along at the same old pace behind the old gray mare of conservative tradition. We're a back number, we're a has-been and everybody on the road is passing us.

BRICK DISPLACED BY OTHER MATERIALS

Twenty-five or thirty years ago, when a man built a house, it was taken for granted that he would use brick or wood. But the cement and stucco and expanded metal people invaded the market with an intelligent and zealous propaganda thru the public prints. I remember how, twenty years ago, a professor of Johns Hopkins took me down on Charles St. in Baltimore and showed me what was to him—and to me for that matter—a very astonishing thing, a building that was being erected while you wait, by simply pouring goo made of cement into molds. Now, the mere novelty of this sort of thing, and the novelty of the stucco house, especially after the World's Columbian Exposition in 1893, would naturally create a vogue for the facile use of poured and plastered materials. But this novelty does not account for the inroads which the cement and stucco business has made upon the brick and lumber business. It is accounted for by the use of intelligent, and serious modern methods of merchandising. These people have literally spent millions of dollars in the past ten years in propaganda, in national publicity, in carrying their message to the universal market of purchasers. They have used space in the periodicals, published books of instruction and plans, established laboratories of scientific research, and subsidized public lectures, and have left no stone unturned to show people everywhere what cement is and can do. Thy forced upon the public mind an understanding of the myriad uses and merits of cement construction. They taught people how to be born in a cement house, be baptized and married in a cement church, work in a cement factory, travel over a cement road, sail in a cement ship, and be buried in a cement grave.

LUMBER INDUSTRY WAKES UP

Did it have its effect? Well, the lumber people thought so. They woke up, altho rather late, about three years ago, and recognized that the public is a rich potential market well worth cultivating. I needn't tell you that the lumber people have been advertising the last three years. I needn't tell you that they have been advertising during the present year of grace, 1917. You have seen it. I haven't the figures, but judging from the space used, three quarters of a million is not an extravagant guess on the amount the lumber people have put into national publicity the present year. Besides birch, gum, oak, and poplar, as interior woods, there have been the structural lumbers of cypress, Arkansas soft pine, southern pine, North Carolina pine, California redwood, fir, white pine, and hemlock; and if you have followed their copy, you will have to admit that they have done some pretty good work. Nor have you seen all they do, for they have attractive booklets, building plans, instructions, suggestions, and helps which are scattered abroad thru the thousands of lumber dealers in the country like autumn leaves in Vollambrosa.

What ought especially to appeal to you is the experience of the Southern Cypress people. They were the pioneers in the lumber field and began seven or eight years ago. As compared with other lumber advertisers, who have been at it for only three years, the government reports, in Bulletin 117 of the Agricultural Department, show their prices stabilized along a line of very slight variation, as compared with other woods which have been subject to wide fluctuations in price. Continued national publicity has strengthened and steadied the market for cypress. Other things had their effect, but this has largely contributed to the result.

Well, the lumber people woke up and got busy. But the face brick people haven't. I understand, however, that they are beginning to yawn and rub their eyes. It is high time they did so, for here are the cement and lumber people, fully occupying the field—literally dug in, and guarding their trenches.

FACE BRICK HAS 2½ PAGES IN "DIGEST"

The "Literary Digest," one of the best national mediums, has recently made a very complete and illuminating report on the advertising of building materials and equipment during the first six months of 1917. It is worth our while to consider it. Under sixteen different heads, such as cement, plumbing equipment, expanded metal, lumber and trim, marble and stone, the "Digest" has carried the advertisements of ninety different concerns during the period in question, covering one hundred and fifty-one pages of white space. Among all of these appeared one face brick manufacturer, occupying two and a half pages,—all honor to the lonely and intrepid advertiser! Turn one hundred and forty-eight arc lights on an object and see how much attention you would get by holding up your piddling little two and one-half lamps. Moreover, the "Digest" has summarized material advertising in twenty-three other national publications, claiming an audited subscription list of 10,000,000, which means at least 20,000,000 readers. The number of concerns advertising runs all the way from sixteen to sixty-two and the space occupied amounts to over one thousand pages. Here again face brick appeared in one of these publications and occupied four pages. *The light showing on brick is growing even dimmer.*

Does this seem fair to face brick which is far and away better in many respects than either cement or lumber? And does it indicate that you are pursuing the best method of reaching the largest possible number of purchasers? Does it show that you are going out into the great market of the world and seriously trying to sell your product? The questions answer themselves and explain in a large measure why you are selling only $10,000,000 worth of face brick annually instead of $30,000,000. I do not wish to offend you, gentlemen, but I am forced to say that *you are asleep*, and people don't know that you are at home.

GET PEOPLE TO KNOW YOUR PRODUCT

If you want to get into line and merchandise your product in the modern way, you must go out into the great universal market where you can appeal to the largest possible number of purchasers. You must get people to know your product. You must keep it as much before their minds as your competitors do their products. You must make your appeal so attractive and forceful as to arouse a desire for what you have to offer. You thus create a new market for your wares, and in so doing you secure a steadier price by a steadier demand which takes up the slack in your manufacturing activities and automatically lowers the ratio of overhead to operating costs.

With the antiquated methods of laissez-faire you lose control and simply float into whatever eddy or back water happens to catch your barque, while, on the great broad stream of increasing population, your competitors pass you by, with the winds of prosperity in their sails, on the sweeping currents of progress and success.

It is for you to take control and go out to get the markets to which you are entitled. In general, it is not possible for you to change the bulk of building activity at any given time which depends upon vast economic and industrial—and as today political—tendencies above your head and beyond your reach. But you could join with some great national movement to mobilize the building professions and industries, an important part of whose functions would be to educate people to own their own homes.

A PLACE FOR EVERY MATERIAL

However, in the field which the general business activities of the country present to you every year, you have wide opportunities of extending a demand for your products. You have no desire to run your competitors entirely off the field. There is a place for cement, stucco, and wood houses, but these are too many of these built where brick should be used. People will always use frame construction but it is unreasonable that eighty-five per cent of the homes in America should be of wood. You ought to cut that figure in half and thus confer a favor on every community by adding comfort, safety, value, and beauty to the homes of this country.

The old haphazard methods will no longer do. It is at once obvious what intensive cultivation of the field open to you means; namely, the education of the public mind, thru national publicity, on the merits of the best building material extant, an economic and durable material that will adorn the palace of a prince or beautify the cottage of a peasant.

People simply don't know the merits of your beautiful product because you have never told them. It is up to you to remove the weeds of ignorance and indifference on the subject, and plant the good seeds of knowledge. I am sure that if people generaly knew what you know about face brick, the demand for it would greatly increase. And it is your business to see that they *do* know.

STUDY CEMENT AND LUMBER ASSOCIATIONS

Time does not allow me, and perhaps it is not necessary at present, to discuss the various means of advertising face brick. It will be enough to say now that when you do the principle thing, raise the money for the actual work in hand, your committee, a small and competent group with power to act, could first canvass the very excellent methods of such associations as those of the cement and lumber people, and then make what special plans might best suit your own campaign. Three things, however, in any case you must count on. First, it will take a good year or more of careful preparation before you can really begin. Second, you will be disappointed if you expect results to follow immediately after you spend the first dollar. Brick is one of those raw materials which with a dozen others go into the finished product, the house. From beginning to end, the planning of the house may run for several years. So that the work you do in advertising now may not show for three or four years to come. I speak from experience.

The effect of national publicity for a product like face brick is of slow growth and takes time to develop the fruit. Third, and this can not be too strongly emphasized. The sort of advertising you can do *does not close the sale*. If you suppose advertising is going to bring people in droves to your plant to demand brick of you at the point of the pistol, you will be sadly disillusioned. Advertising will prepare the soil, *you* must do the cultivating. It will dispose people favorably toward your product, it will create an inclination toward what you have to offer, it will give you a good introduction. But you will have to do the rest and actively follow up the prospective business which advertising develops. Advertising ripens the fruit, but does not put it into your hand or eat it for you. It rests entirely upon you to do the gathering and eating. If you don't, nine-tenths of your advertising money is wasted. Beware of the professional advertising spieler, who fills you with visionary and unreliable hopes. It requires a long, strong and steady pull thru a period of years to get results.

CO-OPERATIVE CHARACTER OF NATIONAL CAMPAIGN

What I particularly want to mention in closing is a most important feature involved in conducting a national campaign of publicity. That feature is its associational or co-operative character. You know that I am only uttering the commonplace of historical development when I say that the progress of our modern era is synonymous with democracy and that democracy simply means the sacred right of every man to freedom for the fullest possible self-development. You know the immense progress humanity has made, during the past century and a half, due largely to the enfranchisement of the individual man. On one side, this principle of individual freedom is the supreme meaning of America to the world, and it is this sacred principle which has now joined issue in a final struggle with its opposite, the autocratic suppression of individual freedom. We have no doubt as to which will triumph.

But along with this doctrine of individual freedom in a democracy, there has grown no less, and as inevitably, the sense of the state as made up of freely interacting and co-operative individual elements, working together for the common good. This second tendency lies in the nature of man as a social being, who cannot live and develop as an individual except in the midst of his fellows. No man lives to himself, and no man dies to himself. While the number of men interacting may grow by an arithmetical progression, their efficiency grows by a geometrical progression. Well, it may or may not take the terrible discipline of brutal war to bring out this great truth, but it is certain that the present gigantic struggle forces not only every nation to centralize and socialize all of its activities, but also compels all the nations to co-operate among themselves, or perish. That is, individualism is one-sided and tends to the disintegrating and destructive struggles of self-assertion. You have seen that in business.

You have seen it in your own association. We are now all seeing it on a grand world scale in the aggressive self-assertion of a great individual nation, that has made itself strong within by co-ordinating, centralizing, and socializing all of its resources, but that without seems to want to hog everything for itself. The only cure for this evil of selfish individualism is the growth of the social co-operative sense, the mutual interaction of all in the interests of all. If the cure doesn't come thru rational persuasion and conviction, then we must take the bitter cure of frightful war, as we are doing now.

PART OF WORLD MOVEMENT

I fancy you have anticipated my point. The growing co-operation and fellowship of your association is but a part of the larger world movement going on around you. To further and develop that co-operation and fellowship is to throw yourself into the main current of progress and onsweeping events. To oppose that co-operation and fellowship is to cast yourself on a tumultuous and dangerous sea without chart, compass, or helm, and with no port in sight.

Whatever action, therefore, you take to increase a sense ot mutual co-operation in your association you benefit every member in it. The arithmetical advance in the association principle means a geometrical advance in associational co-operation power. And what I am trying to say is that no other associational activity in which you can engage will bind you together in a mutual interest, in a sense of industrial and commercial solidarity, so much as a campaign of national publicity. You may take action, gentlemen, within the limits of the law, on stabilizing prices, you may establish practice with agents, you may exchange information on improved methods of manufacture and management, you may perfect and standardize your cost accounting, and the like, but you will all go home to your own devices and others will seldom know what you are doing.

If, on the other hand, you take up a national campaign of publicity, every piece of copy, every booklet, every circular, every card that is used comes out into the open to be known and read of all men. And in it every one of you has a vital interest, because it is yours. You are thus expressing yourself thru it. Nine-tenths of what can be said in favor of face brick, is common to you all, and when you see this material illustrated, written about, praised, in the public prints, you are seeing your own product exploited. What is said and done is as much for anybody as for everybody. All are favored alike, and all have an equal interest in the procedure.

The only unfair element in such national advertising is that too many, who share alike with the rest in its advantages, fail to pay their part of the cost. But that should not deter those who are awake to the need of extending the market for face brick from undertaking a campaign of publicity which every motive of pride and self-interest urges. On the other hand, every man who withholds his support from the common effort and the common good ought to be made to feel that he belongs to the common garden variety of the genus, *slacker*.

WILL DIMINISH NARROW LOCALISMS

To sum up in a word: If you do finally make up your mind, as an association, to co-operate loyally and in good faith for the national promotion of your product thru judicious advertising. I am very sure that it will not only strongly tend to diminish narrow localisms, lessen distrust, jealousy, and suspicion, and create a broader spirit of mutual confidence and fellowship among you; but also abundantly bring to you the advantages, proved by the experiences of others, which I named at the beginning.

It will react upon you beneficially by giving you higher ideals of accomplishment and a sense of pride and determination in making good. It will open to you, and compel you to meet, the demands of the whole wide range of possible purchasers—even the universal Henry Ford market which as yet, you have scarcely touched. It will favorably introduce your product and your salesmen to every prospect in the country; and it will increase your working resources by an immense invested capital of good-will which is worth the money at any price. To say nothing of the public good will which is in itself of incalculable value, it will create what you most highly prize, the good-will of the whole architectural profession. For these trained and skillful men will not only recognize that you are furthering their interests by promoting building in general, but also fully appreciate, what ought to make you justly proud of your industry, that you are co-operating with them in advancing thruout our broad land, a more substantial, a more durable, a more worthy, and a more beautiful architecture.

⁂

Can You Handle More Fire Brick Orders?

We are in receipt of a letter from a large brick distributing company in the East which asks to be placed in touch with companies manufacturing fire brick in the states of New Jersey, Ohio, Pennsylvania, and Connecticut and which are in a position to handle additional business.

We will be glad to send the names of fire brick manufacturers in this district seeking to market their product in the East to our correspondent, upon being so advised by the manufacturer.

COMING CONVENTIONS

Jan. 17 and 18—Northwestern Clay Association, at Minneapolis, Minn. Headquarters, West Hotel.

Jan. 23 and 24—Iowa Clay Products Association, Des Moines, Ia.

Jan. 29 and 30—Sand Lime Brick Manufacturers' Association, at Buffalo, N. Y. Headquarters, Lafayette Hotel.

Jan. 29, 30, and 31—Canadian National Clay Products Association, at Toronto, Ont., Can. Headquarters, Prince George Hotel.

Jan. 31 and Feb. 1—Wisconsin Clay Manufacturers' Association, at Milwaukee, Wis. Headquarters, Republican House.

Feb. 10 to 16—National Brick Manufacturers' Association, at Indianapolis, Ind. Headquarters, Claypool Hotel.

Feb. 10 to 16—American Ceramic Society, at Indianapolis, Ind. Headquarters, Claypool Hotel.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Using Recording Instruments

The view here shown illustrates an application of a recording thermometer used to measure the temperature of the gases entering a waste heat dryer of the Ridgway (Pa.) Brick Co. That part of the thermometer sensitive to the heat is shown inserted in the iron casing of the fan. By having this instrument at hand a constant record of dryer conditions is obtained and a written chart of dryer regulation is had. The men in charge of the regulation of dryer conditions consequently strive to maintain more uniform temperatures which will result in greater efficiency. Causes for poor drying or low efficiency in the dryer may be easily traced when a recording thermometer is at hand. Another advantage is that experimentation may be easily conducted with the view to finding out the most efficient drying conditions.*

Two Notable Features are Shown in This Photograph: First, the Use of a Recording Thermometer for Measuring the Temperature of Dryer Gases, and Second, the Casing Which Protects the Instrument from Injury.

It is also interesting to note the wooden casing enclosing this instrument. It affords a splendid protection from weather or damage that would prove very harmful to the delicate instrument were it exposed.

Parting Materials for Fire Brick

In manufacturing hand molded and soft-mud fire brick a parting sand is required to coat the batch before it is placed in the mold to prevent it from sticking. For this purpose a sand must be used of a certain degree of purity, since impurities may cause a fluxing action on the brick in burning.

Some plants use fire brick bats ground up to a very fine state, which seems to provide a very good parting material. Other plants use a sand of a pure quality. One plant uses what is termed a No. 2 dry sand for hand made brick and a float sand for soft-mud brick. These sands have been found to be very satisfactory for this kind of ware.

⁂

Starting Right at the Bottom

Good kiln foundations are a big advantage to every plant. Often the walls of a kiln crack or sag because the earth which supports it settles or shrinks, due to the heating up that it receives when a kiln is on fire. This can be largely overcome by building a solid support on which the walls of the kiln can rest.

Another advantage to be gained by constructing a good kiln foundation is that the seeping of water up thru the kiln bottom is prevented. This helps to save time in burning, since no heat is then expended in evaporating the water which would otherwise absorb some heat. The time saved

An Excellent Example of a Good, Substantial Kiln Foundation, the Construction of Which Will Have a Decided Effect Upon the Success of the Kiln When Built.

---

*A more complete discussion on the use of instruments in dryer regulation is given in a feature article on page 764 of the October 23, 1917, issue of **Brick and Clay Record**.

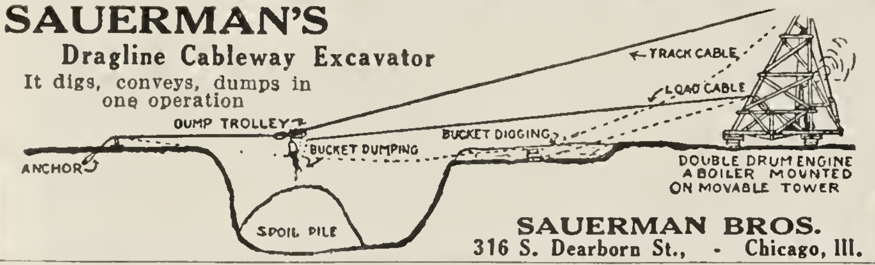
You Should Know of the Many Advantages of
THE POTTS SPECIAL
A Soft Mud Brick Machine
Self Striking—Horizontal—for Common and Fire Brick
Ask Us for Details and Names of Users
C. & A. POTTS & CO., Indianapolis, Ind.

MONEY NECESSARY?
Do You Need Financial Aid?
We have helped many to expand and improve their properties. We specialize in Bonds, their issuance and sale. Write us —Perhaps we can help you.
F. W. Morgan & Co. 1st. NATIONAL BANK BUILDING CHICAGO, ILLINOIS

UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket
Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used. Sprockets, Buckets, Elevators, etc.—Send for Catalog
"The Chain of Double Life"
THE UNION CHAIN & MFG. CO., SEVILLE, OHIO

CLARAGE
KALAMAZOO
Multiblade Fans
Have a Multitude of Good Points
Write for our Complete Catalog
CLARAGE FAN COMPANY
Kalamazoo, Michigan, U. S. A.

GOODRICH Belts
"Commander" Transmission and "Longlife" Conveyor Belts are unbeatable for the Brick and Clay industry.
THE B. F. GOODRICH COMPANY
Factories: AKRON, OHIO Representation Everywhere



SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation
SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.

CORK INSERT PULLEYS
BRAKE LININGS, CLUTCH FACINGS AND TENSIONS
overcome the worst conditions and produce operating economy.
SEND FOR CATALOG
THE CORK INSERT CO., 168A Federal Street, Boston, Mass.

TO STOP advertising to save money is like stopping a clock to save time.

—*The Little News.*

in burning, together with the fuel saved would alone warrant the expenditure required to construct a kiln foundation.

Tho partially covered by snow, the view here shown represents the foundation for a new rectangular kiln to be constructed on the plant of the Ridgway (Pa.) Brick Co.

In constructing this foundation a layer of face brick bats was laid upon as level a surface as it was possible to excavate and these were then slushed with a thin covering of cement. Next, another layer of bats was laid on top of this and it was also slushed with a thin layer of cement. Five layers of bats were laid in this manner and then a thickness of about one-half inch of cement covered on the top.

In building this foundation iron rods were set in, to which the buck-stays can be attached. This makes a comparatively cheap and very good foundation for a rectangular kiln.

⁂

Grease Your Gears and Pinions

The noise and whanging of gears is a nuisance, both because of the fact that it is uncomfortable and because it is an indication that considerable wear is taking place. Stripping of the gear teeth causes a great deal of trouble and damage. A large number of breakdowns could be avoided were care taken to lubricate the gears and pinions properly and to inspect them so as to see whether or not they were in correct mesh.

It is natural that gears, worn to a knife edge, will strip at the first overload, and to prevent or delay this we cannot put forward too much emphasis upon the need of sufficient and proper lubrication. It very frequently occurs that an inferior, low grade lubricant will become less viscous when heated by the friction, and will run off of the parts to which it is applied. A good grade of lubricant will not do this readily—it is cheaper in the end to get high quality goods.

⁂

Urging Safety to the Workman

Working twenty-four hours a day, as is being done in the fire brick plants in the East, means that the machinery must be watched with unusual scrutiny and taken care of in the best possible manner. The wear and tear on equipment under these conditions is great and unless very good care is taken a shutdown is quite liable to result. Every shut-down means a greater loss than if normal conditions prevailed, since it puts two and sometimes three shifts of workmen out of work while in normal, times only one shift need be affected.

In order to take care of the machines in the best possible manner frequent oiling or small repairs must be made. Owing to the great need for the product fashioned by certain machines, the tendency of the workmen is to try to save time by oiling or repairing it while it is still in motion. In doing this, risks are often taken that might easily result in at least the loss of a few fingers.

With labor so scarce and the fact that the loss of a man's services thru injury would be a burden on the hands of the plant owner, the management should watch this point carefully. Perhaps it would be a good plan to follow the example of the Bickford Fire Brick Co., and a few others, in placing enameled signs near all machines which read as follows: *"Shut This Machine Off Before Oiling Or Repairing."*

⁂

Taking Care of Wire Ropes

Various formulae have frequently been offered for determining the proper diameter of pulleys for wire ropes,

but so far most of them have proven unsatisfactory. A point insisted upon by one rope maker is that the diameter should vary not in direct proportion to the size of rope, but as the sectional area of the wire comprising the rope, and according to whether there are hemp cores or not in the strands.

Another engineer contends that it was his experience after trying ropes of two different makes, both of high repute, that neither the size of the pulleys nor the quality of the ropes, in his particular experience, had very much affect on the results obtained. He found that by simply lining all possible pulleys with wood, and lubricating the ropes properly, ropes would wear a very long time without any sign of wear.

The lesson to be drawn is that wire ropes must be kept well oiled; and the oil should not contain either alkali or acid. Care must be taken to avoid twist, kinks and overlaps.

When ropes wear externally it is due to the friction between the rope and its pulley or drum, between the rope and a tie or the ground with which it comes into contact, and the constant bending of the fibers round the curves of the pulleys.

When ropes wear internally it is due to the friction of the fibers over each other, as the rope is alternately bent and straightened, the result of which, on opening a badly worn rope, is seen in the form of powder. To overcome this the ropes should be greased with some satisfactory lubricant.

An advantage gained by greasing a wire rope at this time of the year is that it forms a thin film over the metal which serves as a protective coating to the action of the snow, slush and water of the present season. Owing to the fact that wire rope is very costly at the present time every user should double his efforts to preserve and take good care of it.

* * *

Clay Products to be Prominent at Ohio Show

Brick and clay products manufacturers in Ohio and adjoining states are taking an active part in the coming Columbus Real Estate and Building Show to be held at the Ohio State Fair Grounds, January 21 to 30 inclusive. Already a long list have signified their intention of making exhibits and others are expected to reserve space. Three large buildings have been reserved for the exhibits, which are expected to show every line of building material.

Brick of course will be one of the most prominent of the materials exhibited. Those companies which have arranged to exhibit are: American Sewer Pipe Co., Akron; R. L. Watson, Columbus, jobber in brick and clay products; Flextone Construction Co., Columbus; Columbus Clay Manufacturing Co., Columbus; General Fireproofing Co., Youngstown; Northwestern Terra Cotta Co., Chicago; Claycraft Brick Co., Columbus; Ironclay Brick Co., Columbus, and the Hocking Valley Products Co., Columbus.

L. C. Vinson is manager of the show. He and his brother M. A. Vinson have been traveling thru a dozen states working up interest in the Columbus exhibition. They are meeting with considerable success in interesting manufacturers and dealers in erecting exhibits at the show. "These midwinter shows always accomplish a wonderful amount of good in stimulating building generally" said Mr. Vinson. "The exhibitors in several of the shows in this section did not intend to come to Columbus but they have met with such success that many have signed up for the Columbus Show."

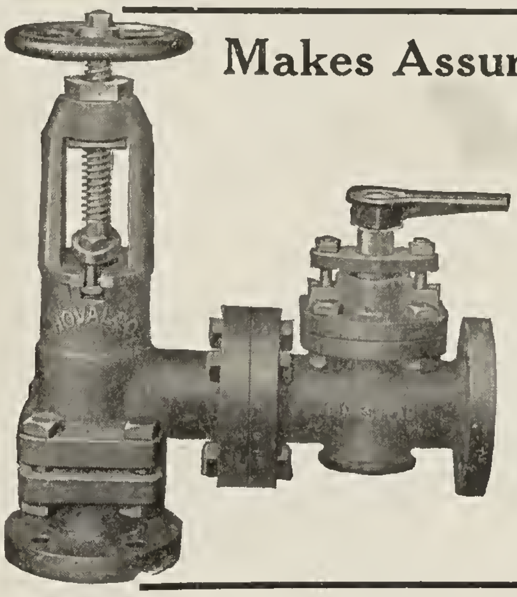
DON'T be satisfied with makeshift methods and inferior appliances in the matter of making belt joints. Use

CRESCENT BELT FASTENERS

and you'll be in good company and lots of it.

ASK US.

CRESCENT BELT FASTENER COMPANY
381 Fourth Avenue New York, N. Y.



Makes Assurance Doubly Sure

The Homestead Quarter Turn Valve installed with the Hovalco Valve, as shown, is a combination that will act as an additional safeguard on your blowoff lines. If any leakage should develop in the angle valve, the Homestead can be closed while the other one is being repaired. Ask us all about this "money saving pair." Catalog L sent on request.

Homestead Valve Mfg. Co.
Homestead, Pa.

Blasting without using the CYCLONE DRILL

is like hunting deer with birdshot. You can't possibly get good results.

We are ready to offer you facts and figures to prove that the Cyclone Drill will soon pay for itself.

Ask for names of users and Bulletin No. 4

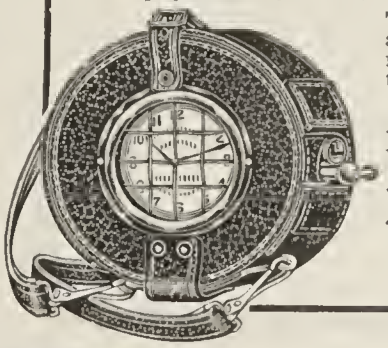
The Sanderson-Cyclone Drill Co.
ORRVILLE, OHIO

Deduct Five Per Cent from the Base Rate of Your FIRE INSURANCE PREMIUMS

If your rate does not exceed five cents, the saving you make by installing a

HARDINGE WATCHMAN'S CLOCK

will pay for the cost of the clock the very first year.



Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

SIL-O-CEL
PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

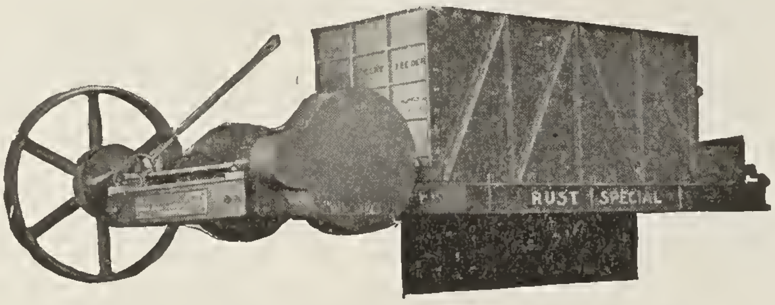
CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway CHICAGO Monadnock Bldg PITTSBURGH Oliver Bldg LOS ANGELES Van Nuys Bldg SAN FRANCISCO Monadnock Bldg

Write nearest Office for Samples and Information

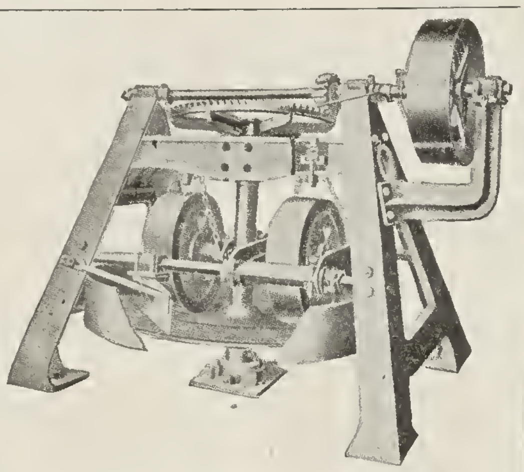
The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana



THE EAGLE DRY PAN



Write for Prices

EAGLE IRON WORKS DES MOINES IOWA

BOOKS?

Yes, indeed—we have a most excellent library of the best books that have been published on the very subjects you are vitally interested in.

None of us can know too much about our daily vocation and if we put in only thirty minutes a day in good reading it is remarkable how much progress we can make.

Look this over—then consult our Book List on page 1154.

QUESTIONS

A Three Cent Stamp May Bring
You Advice That Will Stop
a Waste, Improve Your Ware
or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

Oil an Expensive Substitute

873—*Wisconsin. Will you kindly give me some information regarding the economy of oil as a fuel in burning brick. Oil is now being used in one of the plants in Milwaukee and of course has been in use for many years in Chicago. Due to the scarcity and high cost of coal, my attention has been attracted to oil as a possible fuel to use in burning ware and I would appreciate any suggestions you can give.*

Because of the fact that the Standard Oil Co. is using a process by which it can obtain gasoline from crude oil, the latter product is more valuable and the difficulty of obtaining an adequate supply of it has been greatly increased.

We have just been informed by the Standard Oil Co. that crude oil costs $2 a barrel and that freight to points in Wisconsin would amount to $1.25 per barrel, making a total cost to users of about $3.25. Since three barrels of oil are equivalent to one ton of coal, it would mean, in terms of coal, that you pay $9.75 per ton for your fuel. We believe that this would make the cost of burning with coal considerably cheaper.

⁂

Using Charcoal as a Fuel

843. *Illinois—We have a large quantity of fine charcoal (screenings from our charcoal kilns) which we would like to utilize in firing our drain tile kilns. The material, tho fine, is charcoal.*

Do you know if its use as fuel is practical, and if so, how could it be used on grates in the burning of drain tile in round down-draft kilns? This plan may not be at all practical; but the coal situation is so bad that we would be glad to relieve it in the slightest degree, if at all possible.

We are not familiar with any plant which is using charcoal as a fuel to burn its ware. We do not believe that it would be possible to use this material on the grates of an ordinary round down-draft kiln, but we do believe that there may possibly be some manner of utilizing the charcoal as a fuel in powdered form in much the same manner as powdered coal is used in the steel and cement industries.

Another plan which might be followed in an experimental way is that of using the charcoal as grog—mixing it with the clay as it is ground. During the burning of the ware the charcoal would create a certain amount of heat and consequently effect a saving in the amount of coal required in the kiln furnaces.

Superintendent R. T. Stull, of the Mining Experiment Station of the Department of Mines, Columbus, Ohio, in reference to the above questions, writes:

"It is my opinion that heretofore charcoal has been altogether too valuable to be used for burning drain tile. How-

and ANSWERS

Best Authorities in Every Clay-working Branch are Called into Consultation — Their Advice is Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

---

ever, since the price of coal is gradually approaching the retail price of diamonds, possibly charcoal is sufficiently cheap at the present time to be used for burning kilns.

"I have never heard of any instance where charcoal has been used for this purpose, but it seems to me that your suggestion of using it as a powdered fuel would be the ideal way."

If any of our readers are familiar with the use of charcoal in burning kilns, we would appreciate hearing from them. There seems to be very little data available on the subject, and any help which will enable us to more materially assist our inquirer will be gratefully received. Write to *Brick and Clay Record,* 610 Federal Street, Chicago, Ill.

⁂

To Stop "Sweating" in Dryer Shed

834. *Ohio—I am having considerable trouble in drying drain tile. My dryer consists of a two-story building* 24x100 *ft. Steam pipes run the full length of the building under both floors and are placed two feet apart. My trouble is encountered in drying the tile placed on the second floor. The sheeting on this floor becomes so damp that drops of water collect and fall on the tile. Four small roof ventilators are used in providing circulation of air in the building. Would the placing of steam lines along the roof remedy my trouble, using, for instance, one inch line every two feet?*

Our opinion is that your four small ventilators are not sufficient to give you the proper ventilation and we therefore suggest that you build several more. Probably one for every twenty square feet of roof area in your case would solve the difficulty.

These ventilators may be constructed of wood and have a double wall filled with saw-dust to insulate the inner wall and prevent condensation, due to a cold surface. They are usually four to five feet high and allow an opening of about one square foot in area. The tops of these stacks should be covered with a hood, built on the plan of a four-sided, regular pyramid. The lower ends of this hood should extend to outside of the stack so that any condensate that collects on it will not fall back into the dryer but will run off onto the roof.

If, after trying out the above, you still have difficulty in drying, try putting a few extra pipe lines under the second floor and near the outer walls of the building. This will raise the temperature of the room and tend to prevent condensation.

Steep roofs, of one-fourth pitch or more, covered with shingles, will very seldom "sweat" but such roofs are not regarded with favor, due to the fire risk. To prevent dripping from flat roofs, a ceiling is sometimes put in, thus giv-

Send for a Can Today

Get This Can on TRIAL

Keep your belts from slipping. Don't let them rot.

"SERO" Belt Dressing

makes them efficient.

"Sero" on your belts reduces the power consumption and prolongs the life of the belt.

Sero Specialty Co., Cleveland, O.

We also make "Sero" Gear and Cable Coating and Manila Rope Dressing.

It carries the Shale and Clay

Over—Hills - Railroad Tracks - Rivers

Broderick & Bascom's Aerial Rope Tramway

Transports Clay that would be inaccessible by any other system. Get our complete descriptive catalog.

Broderick & Bascom Rope Co.
St. Louis, Mo.
New York Seattle

IN THE HEART OF THINGS

The House of Taylor

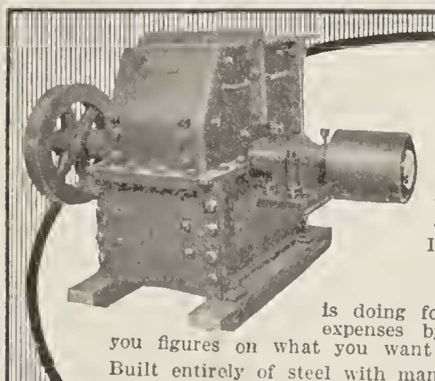
Hotel Martinique
Broadway, 32nd St., New York
One Block from Pennsylvania Station
Equally Convenient for Amusements, Shopping or Business

157 Pleasant Rooms with Private Bath
$2.50 Per Day

257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure
$3.00 Per Day

Also Attractive Rooms from $1.50
The Restaurant Prices Are Most Moderate

400 Baths
600 Rooms



Cut your power costs

If you haven't heard what the

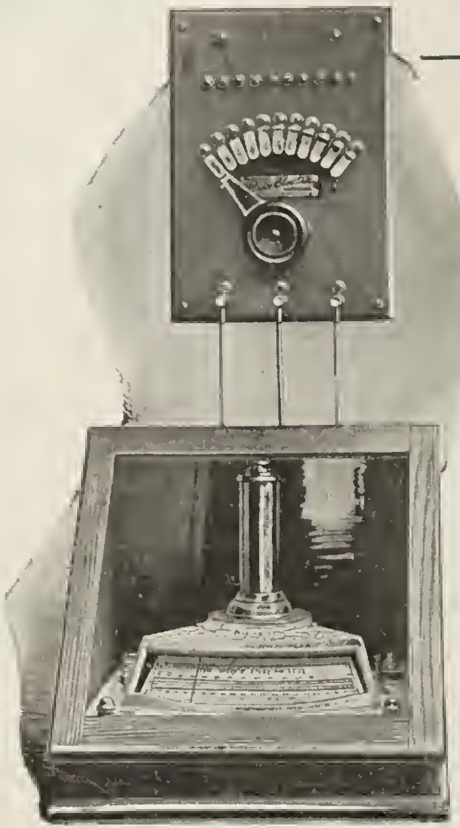
K-B Pulverizer

is doing for others in cutting down running expenses by using less power, let us send you figures on what you want to crush.

Built entirely of steel with manganese steel linings, the K-B will meet the most severe service requirements.

Write us for proof.

K-B Pulverizer Co., Inc.
86 Worth St., N. Y



When the Kilns Are

Snow Capped

When it is piled high on crowns, on the hobs, over the flues, leaking into floor bottom—coal half snow, men half frozen—you never know when the heat is standing, going forward or falling back.

BUT

PRICE PYROMETERS

will record temperatures always, accurately and on time. Investigate.

The Price Electric Company

12367 Euclid Avenue Cleveland, Ohio

You won't have to worry about competition if you treat your clay with

R. H. Precipitated Carbonate of Barytes

You can safely guarantee that your brick will be

Scum-Proof

You can get a higher price and influence architects to specify your product because Efflorescence is prevented absolutely.

But insist on the R. H. BRAND—it's dependable.

We have a complete line of high grade chemicals for the clay industry.

The Roessler & Hasslacher Chemical Company

100 William Street New York

Chicago, Ill. Cleveland O. St Louis, Mo.
Kansas City, Mo. San Francisco, Cal. Philadelphia, Pa.
Boston, Mass. New Orleans, La
Cincinnati, O.

ing an air space between the roof and ceiling, and an occasional steam pipe is placed under the roof to maintain the temperature sufficient to prevent condensation.

We would suggest that you try the above remedies in the order that we have given them, because if they work satisfactorily they will be the cheaper in the end.

⁂

FACE BRICK MAKERS NOT DISCOURAGED

(*Continued from Page* 1116.)

roughened surface with ridges and valleys extending in a horizontal direction when the brick is laid horizontally in the wall. This brick is usually, but not necessarily, of the stiff mud wire cut type.

(C) Color:

The colors most used in the face brick business are red, buff, gray, iron spot and manganese spot. These names are self-explanatory.

In addition to the colors themselves, the following expressions are in common use:

Clear Color—A brick with a clear color and without flash.

Fire Flashed—A brick which has been subjected to a "reducing" action of the fire, thereby bringing out the iron in the clay and producing darker colors on the faces and heads of the brick than is produced in the interior of the brick, i. e., a color, skin deep only.

A FEDERALIZED BUILDING INDUSTRY

A. L. Black, of the "American Contractor," New York, N. Y., then addressed the convention on "A Federalized Building Industry."

In recent months, Mr. Black's paper has been devoting considerable attention to the building situation, resulting from the war. The "American Contractor" has published a number of articles, and some meetings have been held, advocating immediate organization among those interested in building for their mutual protection during the world conflict and also with the object of assisting the government. Mr. Black read an editorial from the New York "Times" in which it was said that building construction could well be considered as unnecessary at this time. The gentleman representing the "American Contractor" pointed out that the New York "Times" would not have dared to say the same thing with reference to the manufacture of pleasure cars, or any other well organized industry, but was able to get away with it in reference to the building industry because it was not nationally organized.

He said that it was not the intention of those backing the movement for a federalized building industry to promote building, but rather to be prepared to lay facts before the government at Washington to better help officials in handling the building situation. In proof of the need for such service he cited the case of another industry which was able by the presentation of facts and figures to stop harmful legislation, to the benefit not only of the industry in question but also the government itself and the people.

Mr. Black closed his talk by announcing a meeting to be held some time early in January at New York at which were to be present representatives of the architectural profession, contractors, building material manufacturers and dealers, the organized building trades, and others interested in the welfare of building. He invited the American Face Brick Association to send one, two or three representatives.

The annual election of officers followed, the nominating committee reporting as follows:

President, George A. Bass.
First Vice-president, S. C. Martin.
Second Vice-president, J. M. Adams.

Directors: Frank W. Butterworth, C. C. Stratton, W. H. Brecht, Joseph W. Moulding and H. S. Hamilton. Mr. Hamilton was nominated for a period of one year to fill the unexpired term of Leon Goodman, who has resigned to enter the army. The other four directors were nominated for terms of three years.

By way of explanation of the broken precedent in re-nominating the same officers after they had served a term, it might be said that the face brick industry is passing thru a crisis unparalleled in its history and the members did not feel that it would be a good plan to "swap horses in midstream." Mr. Bass has done excellent work as the chief executive officer and was a very wise choice for re-election. Upon motion that the secretary be authorized to cast a unanimous ballot for the election of the nominees, those above named were elected.

LAWYER TALKS ON OPEN PRICE

The closing feature of the convention was the reading of a paper on "The Open Price Plan and the Law," by Elmer H. Adams, of Adams, Crews, Bobb and Wescott, Chicago, Ill. Every word which Mr. Adams said was quickly absorbed by every member present, so interesting and valuable were his remarks. This paper is reproduced in full in another part of the present issue, and deserves the careful reading of all clay products manufacturers.

⁂

Ontario National Brick Reorganization Approved

Following a meeting of the bondholders of the Ontario National Bank Co., Ltd., held in Montreal on November 29, it was stated that approximately half the outstanding bonds had been signed up in favor of the agreement providing for a reorganization of the company. The outstanding bonds total approximately $1,600,000. The written consent of $750,000 to the reorganization plan has been secured today, and an additional $124,000 will be signed tomorrow. All the larger holdings are said to be included in the total of $874,000 committed to the reorganization plan. As the circulars giving the details of the reorganization were mailed only a few days ago, there has been little time in which to hear from the smaller holders.

The meeting passed off without incident of note, the majority of those in attendance being of the opinion that the proposed plan offered the best solution of the present difficulties of the company.

As already announced, bondholders are asked to subscribe new money to the extent of 25 per cent. of their holdings of bonds of the old company. If the reorganization goes thru, that would make the outstanding bonds of the proposed new company $400,000, out of a total authorized issue of $500,000. The $1,600,000 common stock of the new company will be given in exchange for the $1,600,000 bonds of the old. Mr. J. N. Greenshields, Montreal, is president. The plant is at Cooksville, Ont.

"SCANDINAVIA"
(Solid Woven Cotton Belt)

is the kind of belt that gets the preference from those clay-products manufacturers who are most particular about knowing the exact cost of operation in every detail.

"Scandinavia" always shows up so well when the manager looks over the cost figures that there never is any question as to the belt that will always have the preference.

"Scandinavia" is the belt for you to use for power transmission—elevating and conveying.

Try it once and you'll be convinced

Scandinavia Belting Co.
106-108 Reade Street, New York

Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.

Canada: Federal Engineering Co., Limited, Toronto and Montreal.

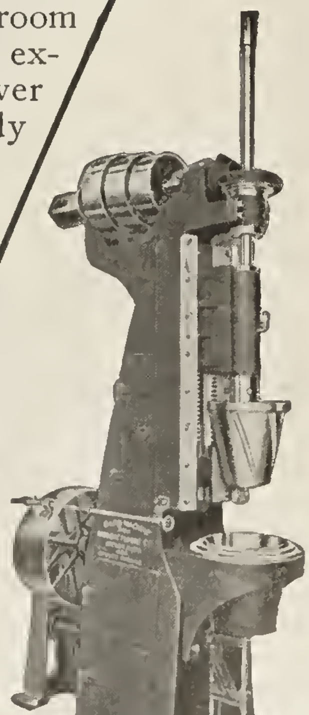
A bi-product that is profitable

Place the machine off in one corner of your plant, and let it absorb the spare time of your machine room men. They soon become expert, and a stock of flower pots quickly collects, ready for the kiln.

It is almost pure velvet—a bi-product—a sure seller with a manufacturing cost low enough to insure a goodly profit.

Send us sample of your clay and let us show you what our flower pot machine will do.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.



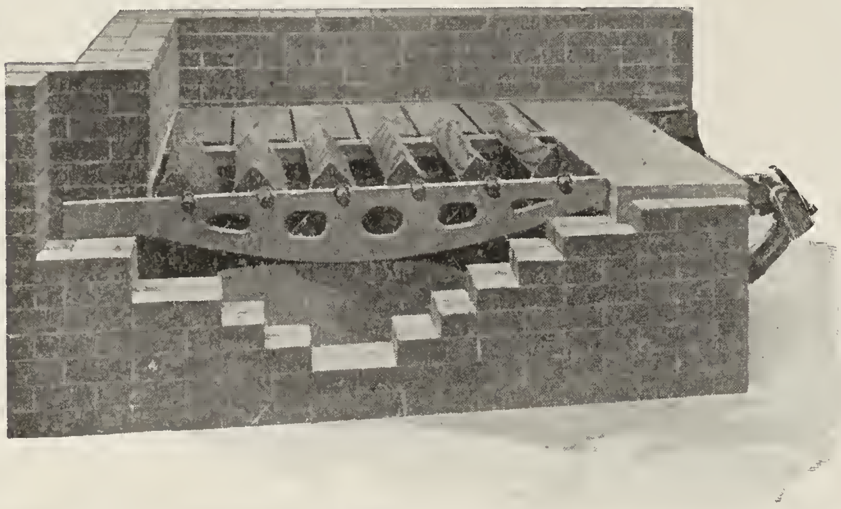
10% of Your Coal Bill
SAVED

GUARANTEED

It may reach 20, 30—even 50% saving—it has in some cases, but we guarantee on 90 days' trial 10% saving

Write today and find out what a big amount these grates will save for you

Cyclone Grate Bar Company
BUFFALO, N. Y.



Gold Medal Award

Panama-Pacific Exposition
for

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Their Merits are Vouched for by
Hundreds of Satisfied Users
Ask for our New General Catalog No. 8

THWING INSTRUMENT CO.
3336 Lancaster Ave. - Philadelphia, Pa.

IN the WAKE of the NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

L. D. Binyon and J. A. Hogan of the S. S. Kimball Brick Co., Chicago, were in Columbus, Ohio, recently looking over their fire brick interests.

Ernest Blake, connected with the Rockport (Ind.) Drain Tile Co. for some time past, has resigned his position and has moved with his family to Cloverport, Ky., where he will engage in farming on an extensive scale.

Robert Taylor, Jr., resident manager of the Hocking Valley Products Co., of Columbus, has been commissioned a first lieutenant in the U. S. Army and has been assigned to train artillery units at Camp Sherman, Chillicothe, a national army cantonment.

Henry M. Clemens, manager of the Cannelton (Ind.) Sewer Pipe Co., and former mayor of that city, has been appointed fuel administrator of Perry County and has been busy since his appointment fixing the price of coal in his county. Mr. Clemens is one of the best known and most public spirited men in Cannelton.

Bernard Joerger, aged 76 years, is dead at his home at Tipton, Ind., after a short illness. He was born in Germany and came to the United States when a child and settled in Ripley County, later moving to Tipton, where he started a tile factory. His was one of the first tile plants to be started in Tipton County. Mr. Joerger is survived by a widow and two sons.

F. Puglia, senior member of the Puglia, Grammatica Co., large dealers in brick and fireproofing at Paterson, N. J., is chairman of the Italian Red Cross of that vicinity. He is now engaged in securing artists from America, London, and Paris to assist at a benefit entertainment. Because of his earnest appeals a number of singers of international reputation have promised to give their services at a concert to take place in the near future. Mr. Puglia's hobby is music; he is a good player of the violin and frequently holds charming concerts at his home.

L. E. Stone, manager of the Shackelford Brick Co., of Des Moines, Iowa, was married late in November. Unfortunately more details are unavailable and due to the proximity of press day, we are unable to collect material for the embellishment of this interesting item. However, the best of good wishes go to Mr. Stone upon his admission to the order of Benedicts.

California

The Livermore (Cal.) Fire Brick Works is making some improvements in its plant. New kilns are being constructed and arrangements are being made for the manufacture of enameled brick and terra cotta.

The city of San Francisco is using a good many vitrified brick for street pavement purposes. Three advertisements for bids to supply these brick appeared in the recent issue of a

daily paper, and similar advertisements appear at frequent intervals.

C. E. Berg, president of the Port Costa (Cal.) Brick Works, has just returned from his eastern trip. He has already given orders for the erection of new drying sheds at his works and with the experience and information which he received in the East he is going to install some up-to-date machinery, which will materially increase the output of his plant.

Attention has been called to the fact that three manufacturers of vitrified clay sewer pipe had been burned out on the Coast during the present year, and the statement was made that these were the first fires in like works in twenty-five years. The Steiger Terra Cotta & Pottery Co. burned early in the year. It has not since been rebuilt and the company announces that it is going out of business as soon as it sells the remaining stock on hand. N. Clark & Sons followed somewhat later with a fire, and while it is intended to rebuild these works as soon as possible, work on them has been held up by the insurance. This has now been adjusted and the work of cleaning up the debris has begun. The last fire was in Spokane and while it did not affect the territory about the bay it did affect some of the more northern markets. As a result of these fires sewer pipe has not been produced in normal quantities. The demand has been good and constant and prices have been advanced about 25 per cent. over those of a year ago. The plants which have been making this product have been busy and have enjoyed a successful year.

Delaware

The Carlton Clay Products Co., of Wilmington, Del., has been organized to acquire and operate clay and shale mines. The capital is stated to be $800,000.

The Holly Clay Corporation has been launched at Wilmington, Del., with a capital of $400,000, to manufacture and deal in clay products of all kinds. William F. O'Keefe, George G. Steigler and E. E. Wright, all of Washington, are the inporators.

Florida

Within a comparatively short time some of the six miles of the roads of Camp Johnson, Jacksonville, Fla., will be paved with brick. All of the work of clearing, grading, and draining has already been completed. A force of over 300 men are at work and already more than 1500 yards of brick have been laid.

Illinois

E. F. Plumb, vice-president of the Streator (Ill.) Brick Co., is now connected with Ammunition Train No. 312 at Camp Pike, Ark.

Contractors and their employers engaged in city improvement work in Chicago appeared before the council committee on home defense recently to oppose the proposed cessation of all city work as a war measure. They claim that a vast army of approximately 49,000 workmen would be thrown out of employment, which would directly affect a population of 225,000 persons.

Sheds, 250 ft. long and 50 ft. wide, which had just recently been constructed on the new plant of the Kankakee (Ill.) Tile and Brick Co., at Baker Hill, were destroyed by fire in the latter part of November. Box cars in the process of loading stood on the siding adjoining the kiln sheds, but a switch engine was operating in the yards at the time and pulled the cars away from all danger. The total damage is estimated at $6,000 and is well covered by insurance.

Marion

Steam Shovels, Dredges, Draglines and Kindred Machinery

IT was no joke—digging tough, lumpy shale like this, and the Moberly Paving Brick Company, Moberly, Mo., really couldn't blame its pit men when they seized every excuse for laying off the job of loading it by hand.

But as that didn't make up for irregular production, the Company bought a "Marion." Immediately, a change!

"MARION" NEARLY DOUBLED THIS FIRM'S OUTPUT, WHILE REDUCING HAND LABOR

—effecting an increase from 40,000 "Missouri" Brick per day, to a capacity of 75,000 per day, with fewer men in the pit.

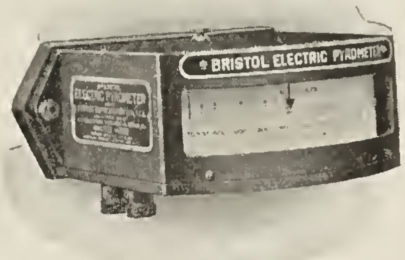
Perhaps we can help effect such economies in your plant. Write us the particulars; no obligation.

The Marion Steam Shovel Company, Marion, Ohio

Branches: Atlanta, Chicago, New York, Philadelphia, San Francisco, Seattle

ESTABLISHED 1884

220



Accurate Records of Kiln Temperatures

Every fluctuation in temperature, and when the fires were started and stopped is plainly recorded by

TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.

PYROMETERS

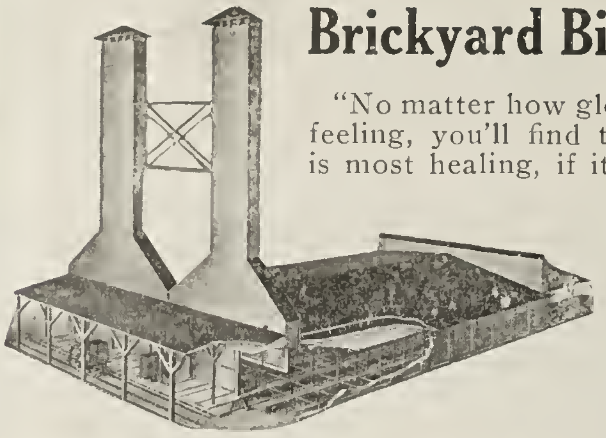
The recording instruments may be installed in the manager's office or other convenient point where they are protected from dust and dirt.

At the kilns a set of Bristol Indicators show the men at all times what temperature they are getting inside of the kiln.

The superintendent can detect any inefficiency by a glance at the charts and knowing this stimulates the men to do better work.

Write for Bulletin 205

THE BRISTOL CO., Waterbury, Conn.



Brickyard Bill Says:

"No matter how gloomy you're feeling, you'll find that a smile is most healing, if it grows in a wreath around the front teeth, thus preventing the face from congealing."

The Standard Drier

makes brick manufacturers smile and keep a-smiling. Because of the way it dries their product through and through, without checking or cracking. Means more and more dollars to meet that old payroll and buy Liberty Bonds with.

Don't matter what the nature of the clay is, either. The Standard Heating Apparatus is designed for flexibility. The piping is in each instance so arranged as to perfectly meet the requirements of the clay and steam conditions.

Ask users about The Standard Drier. We'll send you a list of them, with our catalog for the asking. No obligation whatever. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.

Cleveland, Ohio

Herman A. Holz, Hudson Terminal Bldg., New York, Reoresentative in New England States.

Indiana

The Standard Brick Co., of Crawfordsville, Ind., recently filed a certificate of dissolution and will discontinue business.

The Bippus Tile Co., at Huntington, Ind., a few days ago made an appeal to C. R. Williams, county fuel director, for coal in order to continue the operation of its plant.

Arrangements for the manufacture of drain tile are being made at the plant of the Veedersburg (Ind.) Brick Co. It is believed that it will be possible for the company to make this kind of ware without much difficulty.

The Southern Indiana Clay Products Co., at Huntingburg, Ind., recently finished the shipment of several carloads of brick to New Albany, Ind., to be used in the building of a fire station in that city to replace the one that was destroyed by a tornado last March.

Iowa

The Goodwin Brick & Tile Co. and the Shackelford Brick Co., of Des Moines, Iowa, have opened joint display offices in the Shope building.

A dissolution of the articles of incorporation of the Northwest Brick Co., of Dubuque, Ia., has been filed with the county recorder by Attorney J. C. Hall. The firm, of which George Blunk is president, and Martin Schapp, secretary, operates a brick yard on West Locust street.

More than sixty Mason City, Ia., commercial salesmen visited one of the Mason City Brick & Tile Co.'s plants recently when an excursion was made thru the various factories of Mason City. It is said that this city manufactures eighteen per cent. of all of the drain tile produced in the United States.

A small amount of damage was caused by a fire which started in the drying room of the American Brick and Tile Co.'s plant No. 1. just west of Mason City, Ia. The first was quickly extinguished by the fire department and the damage was confined to the loss of three cars. It is thought that the fire started by excessive heat in the drying room.

The Flint Brick Co., of Des Moines, Iowa, is considering making a radical change in its production policy. The plan involves the retirement of the company from the paving brick field, and the conversion of its plant to the manufacture of hollow ware exclusively. The plan is now closed for a period of two months and before the wheels turn in the spring, a decision will be made as to the future policy to follow. At the present time the Flint plant is the only one in Des Moines producing paving brick, and one of the few in the Buckeye State making this material. The Flint company has just recently completed the installation of a new coal handling track, 300 feet long, which runs along the ends of the kilns. This method has made the use of the horse and cart for distributing coal to the kilns a thing of the past.

Kentucky

The plant of the Southern Brick & Tile Co., Louisville, Ky., has been closed down by the weather. The outdoor tiling work of the concern also has been retarded by the heavy snow. The company is receiving numerous inquiries however,for later delivery—and the prospects are that business in the spring will be good.

Except for deliveries which are being made under difficulties to the new work of the American Tobacco Co., in

Louisville, the P. Bannon Pipe Co. is concentrating on advance business for delivery next summer and spring. The tobacco company has been largely extending its plant in Louisville and is taking large quantities of fire brick and common brick from the Bannon company.

A new hotel to cost about $2,000,000 is soon to be erected at Dawson Springs, Ky., by the McAlpin Hotel corporation, of New York. The corporation owns about 800 acres at Dawson Springs, which is located on the Illinois Central Railroad not far from Tennessee and just north of Princeton, Ky. The place has long been popular as a health resort and is in need of large hotel accommodations. It is said that fifty thousand people visited the place last year.

Operations of the Winchester (Ky.) Granite Brick Co., altho scheduled to cease on December 15, were suspended for the winter after the big snow. Impossibility of getting railway cars to ship its sand-lime brick from the plant at Dudley, Ky., is the principal reason for suspension, with shortage of labor as the other cause. The draft took ten of the company's men and tempting offers from other manufacturing concerns took half of the remainder. A large number of orders are on hand, many of them for Winchester, where there is much building going on, but inability to ship enforces suspension.

Altho the cold weather which visited Louisville, Ky., compelled a short shutdown of the Louisville Fire Brick Co., that is all the company has any complaint about. After having suffered much inconvenience and decreased output, due to the inability to get coal, an appeal to the fuel administrator resulted in prompt correction of that difficulty. Its government contracts and contracts with steel concerns working on government orders fairly entitled it to preferential treatment. J. H. Bell, sales manager of the company, stated that all the company needs now to speed up its deliveries is reasonably good weather.

Sixteen inches of snow and zero temperatures, which arrived hand in hand thruout Kentucky at the end of the first week in December, put the lid on brick manufacturing for the time being. Not only did the weather make loading impossible, but it also prevented service from the railroads which, unused in this part of the country to any such weather, were badly handicapped. Coal supplies ran short in the second place, and the deep snow disorganized street railway traffic to the point where workers could not get to their places except with difficulty and were slowed down by the weather when they got there. Deliveries were consequently stopped on all open orders and operations were temporarily suspended. Weather like this is very much out of the ordinary in the latitude of Kentucky and it is not likely that the snow will remain on the ground for any considerable length of time. All of the employers are keeping their organizations together and will resume operations at the earliest possible moment.

Maryland

The Mayer Brothers have disposed of all of their stock in the Mayer Brick and Tile Co., of Cumberland Md., to F. H. Schreiber, who was one of the directors of this concern. Thru this deal Mr. Schreiber has become the controlling factor and the other directors are Raymond A. Walter, H. V. Hesse, and G. Dud Hocking. The plant, which has a capacity of 24,000 brick a day, was established in 1909 thru the initiative of Henry Mayer. It was destroyed by fire in 1914 and re-constructed in 1916.

SELF LOADING
ELECTRIC INDUSTRIAL TRUCKS

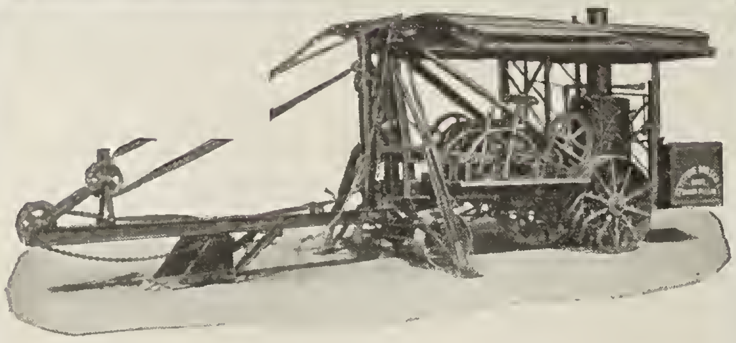
High Up in the Air
4½ Inches—is where the
Elwell Parker "Self-Loading" Electric Truck
carries the load above all runway obstructions.
A special truck built for the Clay Working Industry to handle all the presses produce.
All parts enclosed to fit your plant conditions and enable you to increase your production at less cost.
Four barrow loads delivered at three times the speed on each trip.
Ask for Catalogue No. 711
The Elwell-Parker Electric Co.
"Pioneer Builder of Electric Industrial Trucks"
Cleveland, Ohio

Your Fortune For Coal Or Use
Canton Shaking Kiln Grates
Which?

One of the very prominent refractory men says: "It is simply beyond my comprehension why otherwise good plants still use old methods. We are saving over 25% of our fuel with Cantons, amounting to thousands of dollars each season.
Get our bulletins.

The Canton Grate Co.
1706 Woodland Ave., Canton, Ohio
Southern Representative:
Mc BURNEY & JONES
Efficiency Engineers
829 Trust Co. of Ga. Bldg.
Atlanta, Ga.

KEYSTONE



Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards ly and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Joplin, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

To Judge Belts
—Find out how long they remain in service, doing good work.

HETTRICK belting is famed for its long life, for its ability to transmit power or material, *longer* than is expected.

Best cotton duck, conscientiously fabricated is the reason.

The Hettrick Mfg. Co.
Toledo, Ohio

Massachusetts

Lawrence W. Cushman, president of the East Bridgewater Brick Co., was the purchaser of two large tracts of standing wood at Campello, Mass., recently. The wood will be used by Mr. Cushman at his brick plant in East Bridgewater.

The New England Brick Co. recently received an order for furnishing 3,000,000 brick for new buildings at the government arsenal at Watertown, Mass. This is one of the largest contracts reported in Boston recently. There has been a fair business in moderate sized and small lots and the total for the month of November considerably exceeded expectations. The price for brick delivered on the job continues at about $14.

Michigan

The new buildings of the Sparta (Mich.) Brick and Tile Co. were threatened recently when the office of the company burned to the ground.

W. C. Kirkpatrick, of Chicago, Ill., has undertaken the refinancing and reorganization of the Grand Rapids (Mich.) Brick Co., with the object of enlarging its scope so as to include the manufacture of other clay products and to increase its capacity. It is expected that the plans will be worked out before next spring.

A loss of $12,000 was suffered by the St. Clair (Mich.) Brick Co., when its plant was partially destroyed by fire recently. The fire which destroyed the kiln shed,—probably the largest of its kind in Michigan—the dry shed, and two hundred cords of four-foot wood, was believed to have been caused by sparks or flames rising from the burning kiln and igniting the frame enclosure. The machinery suffered little damage. It is thought that when the company rebuilds the plant, oil burning apparatuses will be installed. The work of rebuilding will commence as soon as the insurance adjusters fix the amount of damage.

Deliveries on one of the largest single orders ever placed for face brick in Detroit have just been completed by the brick department of the United Fuel & Supply Co., in a period of time that is believed to set a record in the city. The company supplied 750,000 Kittanning gray brick for three buildings of the Lincoln Motor Co., Detroit's greatest war industry, which is now springing to completion to manufacture the famous Liberty motor which will drive American airplanes over the battlefields of France. The material was all placed on the job within seven weeks. The company also supplied several million common brick for this job. It has also just closed a contract to supply 360,000 of the same brick for the Detroit Public Library building.

Missouri

The Chicago Fire Brick Co. has completed arrangements for the erection of a $100,000 plant at Wellsville, Mo. The concern has leased 1000 acres of land from which it expects to procure the clay for the manufacture of the brick. Work has already begun on the site of the new plant, which will be established on the branch line of the Wabash Railroad just west of Wellsville. It is expected that between 400 and 500 men will be employed when the plant is in full operation.

Montana

Butte, Mont., is experiencing a peculiar situation at the present time. Fearing that prices will soar to unprecedented levels next spring, many prospective builders are letting contracts now for buildings that will be rushed to immediate completion. Conditions indicate that prices will be much higher next spring. Such a condition will exist even if peace is declared, and if the war continues the labor situation will probably become more acute before the spring of 1918. It is generally the case that building operations cease after November in this locality.

W. E. Dowlin is back at his home in Forsyth, Mont., after an absence of several weeks, during which time he was looking after his brick plant interests in the state. Mr. Dowlin reported a fine business during the past season and has a good stock of brick now on hand.

New Jersey

The Berkeley Brick Co., located on the Lackawanna Railroad at Berkeley Heights, N. J., has been sold by the Factory Exchange, acting for the First National Bank of Bangor, Pa., to the Block Chemical Works, of Newark.

Edward M. Rodrock, of the Edward M Rodrock Co., said that his trade this year has exceeded anything in previous years, but it has been hampered somewhat by the unfavorable conditions created by the war. The situation must improve with the coming of spring he thinks since new structures will have to be erected for both business purposes and dwellings.

Rudolph Krantz, of the North Jersey Brick Co., Paterson, N. J., says that his trade has been as good as he could expect. The destruction of the plant at Kingsland and his efforts to rebuild in time to obtain some of the business for this year kept him pretty well employed all the season. His sales have been very good, under existing conditions. However, he looks forward to improvement next season and thinks that much of the building which was delayed this season will be done during the coming year, and this view is shared by others interested in the brick business.

New York

Despite the increased cost of building material, despite the shortage of labor and transportation difficulties, despite the war scare and despite everything else the cold figures show that building activity in Syracuse during the first eleven months of this year has fallen off only four per cent. In actual money the decrease is $152,708 out of a total of nearly $4,000,000. This per cent. is attained despite a drop in the November permits of more than $427,000, compared with one year ago. During the same month the Syracuse clearing house record is greater than for any November for the past twelve years.

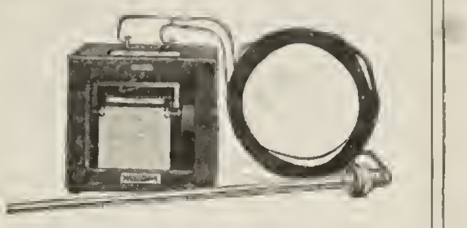
The Empire Fire Brick Corporation, with headquarters in New York City, has purchased the plant of the Ithaca (N. Y.) Brick & Tile Co., at East Ithaca. The corporation will start the manufacture of Wagner fire brick, building brick and building tile, sewer tile and miscellaneous articles made from waste coal ashes by the Wagner process. The Ithaca plant is to be the main plant of several similar concerns to be operated by the corporation in this state. It will have a capacity of 25,000 brick per day. The sale includes all of the buildings, land rights and equipment. B. T. Haines, president of the Empire Fire Brick Corporation, is now negotiating with a railroad for the installation of two sidings.

North Dakota

The Hebron (N. D.) Fire and Pressed Brick Co. is now making hollow tile in addition to pressed brick. Some of the kilns on the plant of the Hebron Fire and Pressed Brick Co. are fired with lignite while others are fired with producer

Tycos
TEMPERATURE INSTRUMENTS
Indicating Recording Controlling

Mercurial, Recording and Index Thermometers for all industrial and laboratory applications.
Electric Contact Thermometers.
Temperature, Pressure and Time Regulators.
Mercury Column Vacuum Pressure and U Gauges.
Base Metal, Rare Metal and Radiation Pyrometers.
Fery Radiation Pyrometers.
Hygrometers.
Hydrometers.
Mineral Oil Testing Instruments.
Aneroid Barometers.
Mercurial Barometers.
Recording Barometers.
Pocket Compasses.
Surveying Compasses.
Rain Gauges.
Anemometers.
Air Meters.
Thermographs.
Hand Levels.
Aviation Barometers.
Inclinometers.
Sphygmomanometers.
Fever Thermometers.
Urinary Glassware.
Thermometers of all kinds for home and general use.

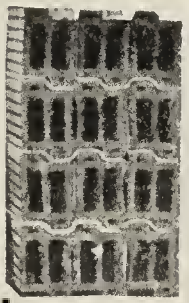


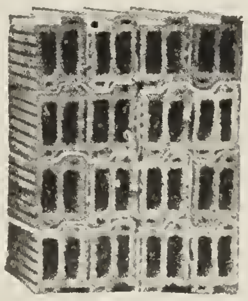
Tycos RECORDING PYROMETER

Tycos Pyrometers are a necessity in every industry involving the application of high temperatures.

Just write for our catalogue describing these efficient Tycos aids.

Taylor Instrument Companies
ROCHESTER, N. Y. 67





You Can Forget Competition

if you are quick enough to get the license for manufacturing, in your territory,

"LOXALL"
A Better Hollow Block

Those who are making this block never have to worry about what the other fellow may charge for his block. The "Loxall" is quickly accepted in place of any other by the architect, the builder, and the mason.

The interlocking lugs dovetail perfectly—the joints are easy to spread. It is a perfect insulator too.

Write for territorial assignment contract.

J. E. EXNER
602 Lincoln Street, Coffeyville, Kansas
Patented in the United States and Canada

ROLLIN'S
BARIUM
CARBONATE
PREVENTS
SCUM

Add it at the pug mill, or perhaps at the dry pan—it makes the scum-producing salts insoluble—the ware comes out of the kiln with a clear skin—it is, and always will be, saleable. In sewer pipe clays it makes the salt glaze—stick.

THE ROLLIN CHEMICAL COMPANY
INC.
CHARLESTON WEST VIRGINIA
The National Aniline and Chemical Company
of 244 Madison Ave., New York
General Sales Agents

101 Questions Answered

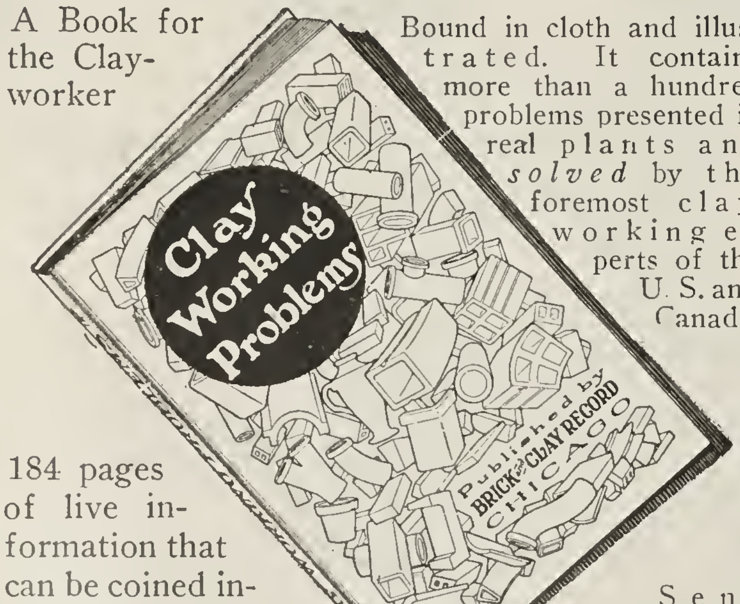
A Book for the Clay-worker

Bound in cloth and illustrated. It contains more than a hundred problems presented in real plants and *solved* by the foremost clay-working experts of the U. S. and Canada.

184 pages of live information that can be coined into dollars on every clayworking plant.
Price $1.50

Sent post-paid on receipt of check, cash or money-order by

Brick and Clay Record
610 Federal St. CHICAGO


Clay Working Problems
Published by BRICK & CLAY RECORD CHICAGO

gas made of lignite. It is said that there is a great saving effected by using this gas.

Ohio

The office committee of the Ohio Paving Brick Manufacturers' Association met in the offices of the association, Hartman Bldg., Columbus, Ohio, recently to discuss current affairs. The office committee really acts as the executive committee of the organization.

The Blair Brick Co., of Cincinnati, Ohio, altho closed down, is preparing for spring business. It is now having constructed two large barges for transporting its brick. The company lost a barge some time ago and since has had some difficulty in shipping its product.

Little new business is on the books of the Cincinnati (Ohio) Clay products Co. This concern is busy with some government work and consequently enjoys speedy shipment of its product and other advantages. Mr. Stoner was its representative at the big meet at French Lick.

One of the best features of the brick business in central Ohio territory is the demand for common brick with which to build factories and additions to existing plants. All common brick manufacturers and dealers have been fairly busy supplying this demand. Prices on common brick remain strong at $11 to $12.

Because of a scarcity of clay, brick making at the Toledo (Ohio) House of Correction has been abandoned. The workmen formerly employed in brick making will now be sent to work on the workhouse farm. According to reports about 800,000 brick were made during the past season and sold at the rate of $9 a thousand.

County engineers in nine counties in Northwestern and Western Ohio have joined in asking the Council of National Defense to rescind Priority Order No. 2, which prevents the shipping of road materials in open top cars. They urge the necessity of continuing road improvement in the interests of winning the war. The petition was referred to the priority director of the national government.

The face brick business in Columbus and central Ohio is rather quiet because of the lack of shipping facilities. Owing to federal regulations very few cars for the movement of face brick are available on Ohio roads and consequently the business is at a standstill. Many of the Ohio plants are closed down for the time being and will remain out of operation until shipping facilities are afforded. As a result of the railroad conditions some jobs are being held up.

While building operations in Columbus during November, 1917, were not as active as during the corresponding month a year ago, still there is some encouragement in the report recently submitted by the city building department. The reports show that some builders are proceeding and outside information shows that other builders are contemplating construction work after the first of the year. During the month of November the department issued 158 permits having a valuation of $273,385, as compared with 217 permits and a valuation of $554,965 in November, 1916. For the eleven months of the year the department issued 2062 permits having a valuation of $3,761,250 as compared with 3030 permits and a valuation of $6,951,900 in the corresponding period in 1916.

West Virginia

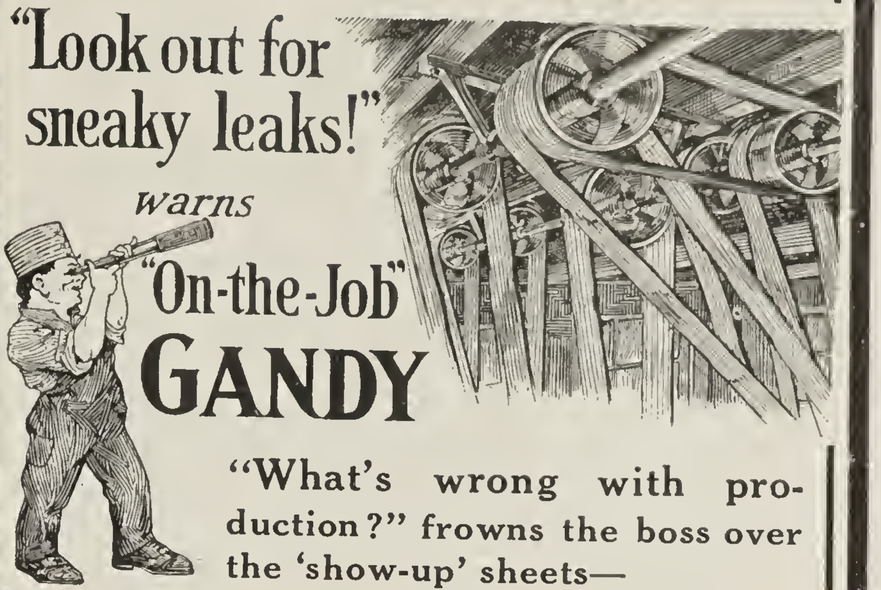
It is estimated that a loss of between $30,000 to $40,000 was sustained when the Clifton sewer pipe plant owned by the Mack Manufacturing Co., of Wheeling, W. Va., and located just north of New Cumberland, on the Ohio River, was destroyed by fire the night of December 3. The Clifton works was one of the pioneer brick plants in the upper district of Hancock County. About a decade ago it was converted into a sewer pipe works when taken over by the Mack interests. Since 1906, however, the plant has not been occupied as a manufacturing plant, but has been used as a warehouse by its owners. The cause of the fire has not been determined.

⁂

A. F. B. A. CONVENTION ROSTER

(Continued from Page 1118.)

H. E. Kemper, R. L. Queisser Co., Cleveland, Ohio.
J. E. Morrisey, Cleveland Builders' Supply Co., Cleveland, O.
L. A. Krueger, Cuyahoga Builders' Supply Co., Cleveland, O.
John Harms, American Face Brick Co., Cleveland, Ohio.
J. Jneer, B. Mifflin Hood Brick Co., Atlanta, Ga.
A. S. Baird, O. W. Ketcham, Philadelphia, Pa.
P. R. Ketcham, O. W. Ketcham, New York, N. Y.
Wm. H. Lucktenberg, Lake Shore Shale Brick Co., Ashtabula, Ohio.
C. F. Miller, Darlington Brick & Mining Co., Darlington, Pa.
Rossen Thomas, Pittsburgh Callery Brick Co., Williamsport, Pa.
George P. Anderson, Briggs Co., Lansing, Mich.
D. H. Miller, Milton Brick Co., New York, N. Y.
John H. Donohue, Jr., Corning-Donohue Brick Co., St. Paul, Minn.
John C. S. Corning, Corning-Donohue Brick Co., St. Paul, Minn.
Chas. Bonner, Bonner & Marshall Brick Co., Chicago, Ill.
E. G. Zorn, Editor, *Brick and Clay Record*, Chicago, Ill.
W. P. Varney, Hydraulic-Press Brick Co., Chicago, Ill.
D. F. Stevens, Acme Brick Co., Cayuga, Ind.
Isaac H. Tyler, Tyler Building Supply Co., Louisville, Ky.
H. H. Frazer, R. B. Tyler Co., Louisville, Ky.
S. E. Matters, Standard Cement & Salt Co., Duluth, Minn.
R. E. Howard, Mecham and Wright Brick Co., Chicago, Ill.
Wm. H. Gifford, Wisconsin Lime & Cement Co., Chicago, Ill.
C. F. Mattes, Decatur Brick Manufacturing Co., Decatur, Ill.
M. P. Louwerse, S. A. Morman & Co., Grand Rapids, Mich.
Clarence S. Nixon, Paine & Nixon Co., Duluth, Minn.
Frank L. Shafer, McDonald Coal & Brick Co., Detroit, Mich.
E. C. Howard, Claycraft Brick Co., Columbus, Ohio.
Jno. M. Stoner, Cincinnati Clay Products Co., Cincinnati, O.
Walter Pursell, Pursell-Grand Co., Cincinnati, Ohio.
E. F. Grand, Pursell-Grand Co., Cincinnati, Ohio.
J. M. Morrison, Puritan Brick & Tile Co., Detroit, Mich.
H. F. White, Hocking Valley Products Co., Columbus, Ohio.
F. A. Hoiles, Alliance Brick Co., Alliance, Ohio.
H. Serkowich, Secy., Cincinnati Brick Club, Cincinnati, Ohio.
E. G. Pick, Moorse-Coney Co., Cincinnati, Ohio.
D. C. Shorey, D. C. Shorey Brick Co., Cincinnati, Ohio.
J. A. Peters, Builders' Material Co., Cincinnati, Ohio.
J. C. Carlyle, Albion Shale Brick Co., Albion, Ill.
W. J. Pugh, Jr., Builders' Material Co., Cincinnati, Ohio.
J. M. Adams, Ironclay Brick Co., Columbus, Ohio.
C. E. Jewett, Hocking Valley Fire Clay Co., Nelsonville, Ohio.
Arthur W. Riggs, Brick Sales Co., Cincinnati, Ohio.
Chas. F. Herman, U. S. Brick Co., Tell City, Ind.
F. W. Butterworth, Western Brick Co., Danville, Ill.
F. N. Parr, Western Brick Co., Danville, Ill.
F. C. Lafountain, Reliance Brick Co., Kansas City, Mo.
W. H. Brecht, Boone Brick, Tile and Paving Co., Boone, Ia.
C. C. McCormick, Des Moines Clay Co., Des Moines, Ia.
A. C. Ernst, Ernst & Ernst, Cleveland, Ohio.
John T. Harrington, Twin City Brick Co., St. Paul, Minn.
R. D. T. Hollowell, Secy., American Face Brick Association, Pittsburgh, Pa.
G. J. Suffle, Western Brick Co., Danville, Ill.



"Look out for sneaky leaks!" warns "On-the-Job" GANDY

"What's wrong with production?" frowns the boss over the 'show-up' sheets—

"Same material; same hours; same men; same machinery, but production falling off."

"Sneaky leaks", whispers *'On-the-Job' GANDY.* "A slip here and a slack there aggregate short production—real loss!

"What you need is a steady power belt built for the job—a belt that under the severest strain and wear has passed every efficiency and longevity test—a belt with a 'round the world 37 years' satisfaction record."

That's a *GANDY* the original stitched cotton duck belt—the all-the-time belt, but especially needed NOW for wartime production.

Order your *GANDY* belts (power or conveyor) through your Mill Supply House or Home Plant direct. Look for the painted green edge and well known trademark.

Write for samples and prices

THE GANDY BELTING CO.
732 West Pratt Street,
BALTIMORE, MD.
New York Branch, 36 Warren Street

Your Coal Troubles Are Not Over

The tentative prices made by the government do not insure against shortage next winter.

You will have difficulty in securing the coal necessary to the operation of your plant.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

E. C. Hervey, Hydraulic-Press Brick Co., Indianapolis, Ind.
F. H. Tondreau, Brazil Clay Co., Brazil, Ind.
A. E. Davis, Western Brick Co., Indianapolis, Ind.
F. H. Chapin, Hydraulic-Press Brick Co., Cleveland, Ohio.
Jas. R. Thomas, Standard Brick Co., Crawfordsville, Ind.
G. E. Luckett, Crawfordsville Shale Brick Co., Crawfordsville, Ind.
A. V. Smith, Streator Brick Co., Streator, Ill.
Emil M. Kraatz, Wisconsin Face & Fire Brick Co., Milwaukee, Wis.
T. E. Dever, Milwaukee, Wis.
D. P. Mahoney, Sioux City Brick & Tile Co., Sioux City, Ia.
W. B. Winters, Hay-Walker Brick Co., Pittsburgh, Pa.
James M. Crowell, Hydraulic-Press Brick Co., Du Bois, Pa.
Clyde C. Murray, Reynoldsville Brick & Tile Co., Reynoldsville, Pa.
M. Mc. Everhard, Everhard Brick Co., Massillon, Ohio.
O. G. Knoske, Derr-Shaffer Sales Co., Akron, Ohio.
T. P. Cuthbert, Fallston Fire Clay Co., Pittsburgh, Pa.
L. B. Rainey, Fallston Fire Clay Co., Pittsburgh, Pa.
Chas. C. Stratton, Bradford Pressed Brick Co., Bradford, Pa.
B. E. Thompson, Rochester Clay Products Co., Rochester, Pa.
J. Parker B. Fiske, Fiske & Co., Inc., New York, N. Y.
Theo. H. Swan, Rochester, N. Y.
G. W. McNees, Kittanning Clay Products Co., Kittanning, Pa.
S. C. Martin, Kittanning Brick & Fire Clay Co., Pittsburgh, Pa.
Edwin F. Knight, Buffalo Builders' Supply Co., Buffalo, N. Y.
D. W. Clark, Buffalo Builders' Supply Co., Buffalo, N. Y.
A. S. Reid, A. S. Reid & Co., Newark, N. J.
C. A. Gardner, American Enameled Brick & Tile Co., New York, N. Y.
W. Jos. Degenhart, John H. Black Co., Buffalo, N. Y.
F. A. Leard, Lumbermen's Supply Co., Springfield, Mo.
C. E. Davis, Bloomfield Brick Co., Bloomfield, Ind.
J. W. Bostick, West Salem Hollow Brick & Tile Co., West Salem, Ill.
J. L. Buckley, Capital Clay Co., Des Moines, Ia.
George A. Bass, Hydraulic-Press Brick Co., St. Louis, Mo.
Thomas Moulding, Thomas Moulding Brick Co., Chicago, Ill.
J. W. Moulding, Thomas Moulding Brick Co., Chicago, Ill.

* * *

CASTING OF HEAVY CLAY WARE

(*Continued from Page* 1131.)

Fig. 1 shows a tank built so that the mold can be set down into it and put under a partial vacuum. It is hoped that experiments with this method will result in making it possible to cast much thicker pieces and also do away with the use of cores. If the cores can be done away with it will be possible to cast covered pots and other difficult pieces. Ware which had walls of different thicknesses would then be cast in molds that also had walls of different thicknesses. The thinner the wall of the mold, the greater the suction and consequently the thicker the casting so the mold walls would be exactly opposite in thickness to the walls of the ware. This method has been experimented on in Europe apparently with some success.

The Bureau of Standards has been lining some glass pots with a different quality of material from the body of the pot. This has been done by hand but it is proposed to do it by the casting process. Small pieces have already been handled this way.

There is no apparent reason why this method cannot be used in the application of engobes to bodies in sanitary and chemical ware where the shape permits. It is a subject that is worthy of considerable experimental work and the bureau hopes to be able to accomplish more as time permits.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

The Ideal Drive

One of the most attractive and also highly interesting books that has come to *"Brick and Clay Record"* this year is Book No. 310 titled "The Ideal Drive for Clay-working Machinery," which has been issued by Link-Belt Company of Chicago.

This book is attractive because of the brick border design, and it is highly interesting because of the many illustrations of Link-Belt equipment as used in a large number of clay-products plants. The information contained in the book is of immense value to any clay-products manufacturer who is desirous of increasing the efficiency of his motive power, and at the same time decrease the cost.

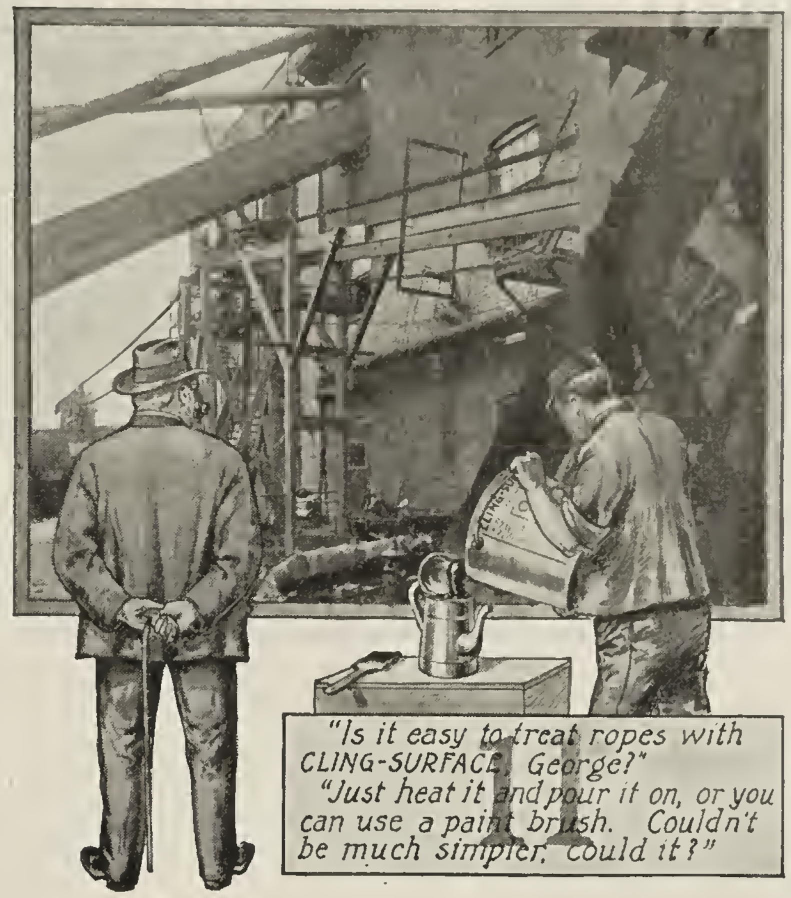
An Interesting Book Issued by Link-Belt Company

Link-Belt Silent Chain Drivers are becoming decidedly more popular in this industry every year, and Link-Belt Company's engineers have made a very diligent study of motor drives in clay plants, and have data ready to help any manufacturer solve this very important problem. A copy of this book will be mailed to any reader of *"Brick and Clay Record"* on application to the Chicago office of the company.

⁂

"Motor Trucks of America"

Announcement is made that the 1918 edition of "Motor Trucks of America," of which S. V. Norton, manager of truck tire sales of the B. F. Goodrich Rubber Company, is the author, will be ready for distribution on January 1st.


"Is it easy to treat ropes with CLING-SURFACE, George?"
"Just heat it and pour it on, or you can use a paint brush. Couldn't be much simpler, could it?"

Some of the largest manufacturers of transmission rope not only use CLING-SURFACE on their own drives, but recommend it to their customers.

This proves its dependability, for these manufacturers, by recommending it, not only bank on CLING-SURFACE for the safety of their ropes in their customers' hands, but stake their own reputation as well.

But the best way for you to prove that this semi-liquid rope preservative, which contains no sticky or injurious materials, will quickly and easily preserve and waterproof your drives, will be to accept a can for 60 days' trial. It is understood that this not to be paid for unless you are fully satisfied.

So write us now, or send for our Rope Folder P384.

Remember, use CLING-SURFACE and you won't need belt or rope dressings.

Cling-Surface the life preserver for belts TRADE MARK

CLING-SURFACE COMPANY
1029 Niagara Street
Buffalo N Y U S A

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men—in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.20
Ceramic Industries—A Treatise On (E. Bourry)	5.00
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.50
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scientific Industrial Efficiency	2.00
Scumming and Efflorescence	.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, Book Department,

Brick and Clay Record
610 Federal Street, Chicago, Ill.

The book, consisting of 200 pages of reading matter, illustrations and specifications, is the sixth to be issued in as many years. It is hand sewn and of heavy binding.

Complete specifications of nearly 150 of the leading gas and electric driven motor trucks are contained in the volume. In fact, there are thirty-one specifications for each model. These details are absolutely dependable, as the approval of each truck manufacturer is obtained before specifications of his model are inserted.

The illustrations, too, add much value to the book. They picture the very latest models and furnish the man in the market for a truck, or the manufacturers themselves, for that matter, suggestions for special bodies for particular lines of work.

Great interest has always been aroused by the introductory articles by Mr. Norton. His previous papers on "Lengthening the Life of the Motor Truck," "Devices that Make for Motor Truck Efficiency" and "Fundamental Questions Involved in Changing from Horse to Motor Delivery" have been so much in demand that frequent reprints have been necessary to take care of requests for extra copies. Many abuses to motor trucks, so manufacturers say, have been eliminated through information thus given by Mr. Norton.

* * *

"Du Pont Products"

"This is the title of a book issued by E. I. du Pont de Nemours & Company, Wilmington, Del., and the second annual edition has just come from the press. It is not only one of the most interesting, but also valuable booklets that one could have in a business library, inasmuch as it outlines the complete list of products manufactured by this company. Three paragraphs in the preface of this book are particularly interesting.

"Few people are aware, however, that the ramifications of the explosives business are so extensive and varied that they involve the manufacture of various chemicals, distillation of wood and of gas tar and the production of the chemical bases of industries apparently remote from the explosives business.

"On account of the enormous expansion of our business, made necessary by the war and by the inability of this country to longer import many of its chemicals and raw materials, it became necessary for the du Pont company to greatly expand its industrial activities, and the purpose of du Pont Products Book is to tell the public of the hundreds

It Lists All the Products of E. I. du Pont de Nemours & Company, and Its Associates, and Describes Their Uses as Well as Who Uses Them of commodities we now make and sell, many of which until recently had never been made on this continent.

"So rapid have been the developments forced upon us by circumstances and by the obvious requirements of good business, it is quite out of the question that any edition of this book could ever be up-to-date, because by the time the printer is able to deliver the finished copies, additional products will have been developed on a commercial scale."

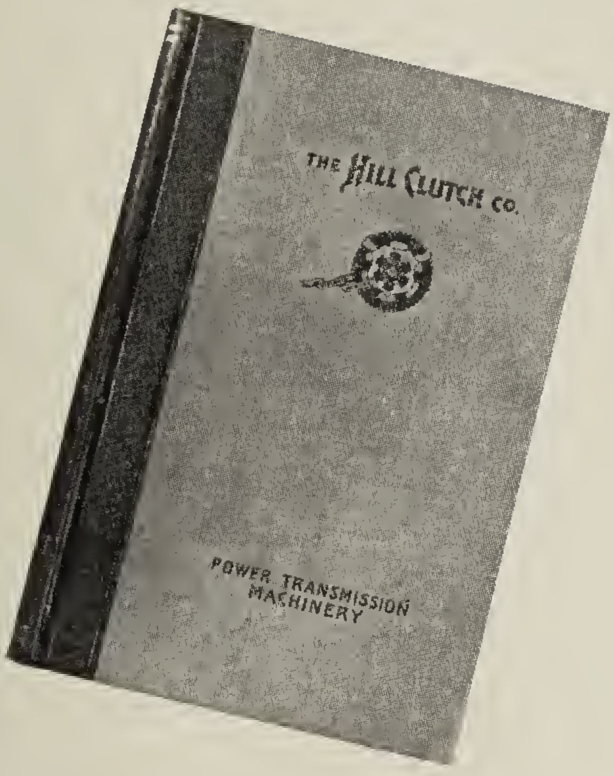
A copy of this book will be mailed to any clay products manufacturer who will write to the home office at Wilmington, Delaware, and ask for it.

* * *

Power Transmission Machinery

A catalog that is different, and worthy of designation as a text book, is issued by The Hill Clutch Company of Cleveland, Ohio. It contains two hundred and twenty-four pages, and is bound in cloth and board.

Dealing in power transmission equipment solely, it takes up in successive order, illustrating and furnishing data on,—shafting, bearings, collars, couplings, base plates, floor stands, post hangers, brackets, clutches, pulleys, belt tighteners, rope transmission and sprockets.



New Book Giving Data and Prices on Power Transmission Machinery

Prices and all needed data are given in plain understandable terms.

At the back of the book there are pages of engineering data, including rules, forumlæ, tables, etc., that make the catalog extremely valuable as a reference work.

If you need power transmission equipment, if you are interested, if you want to become familiar with the latest modern practice, ask the Hill Clutch Company for catalog number eleven.

* * *

"A Sure Hit"

A recent circular under the above heading, sent out by the Homestead Valve Manufacturing Company of Homestead, Pa., contains the following excerpts that are of interest:

"Homestead Quarter-Turn Cocks always make a 'sure hit' with the operating engineer, as well as with everybody connected with the power house because they meet all the requirements of the most difficult service.

"Homestead Quarter-Turn Cocks have 'made a hit' with the man who actually has charge of the valves and pipe lines because it saves him trouble, worry, shut-downs, blow-outs, etc.

"Homestead Quarter-Turn Cocks, once installed, need no attention for years—they will last several times as long as the ordinary valves because they are seatless while the pres-

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.

400 Chestnut Street
Philadelphia, Pa.

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

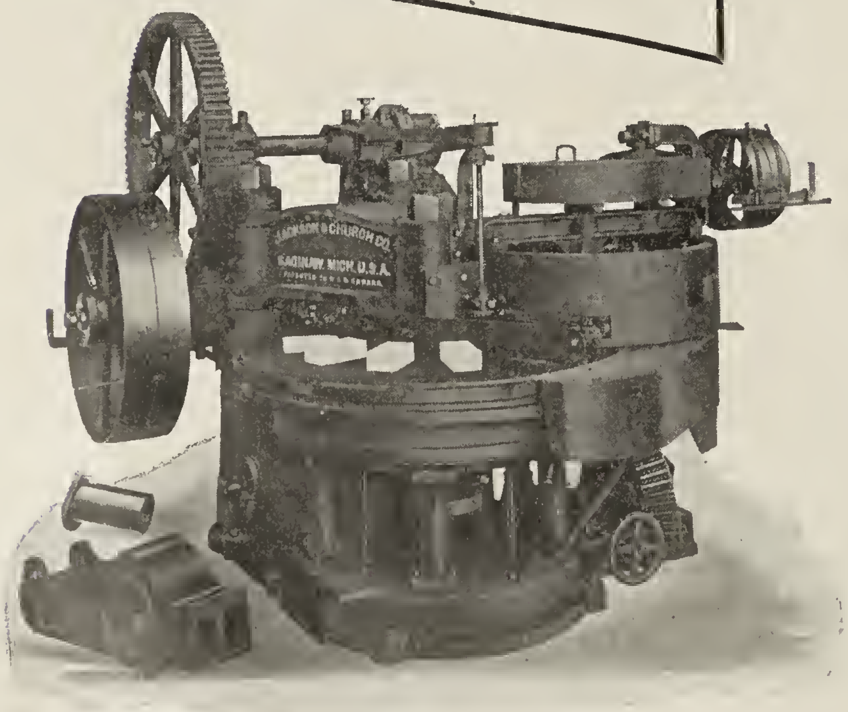
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

sure is passing through. They are absolutely safe and work easily at all times.

"Homestead Quarter-Turn Cocks 'hit the mark' with the plant owner because they stop effectively all leakages due to imperfect valves.

"Homestead Quarter-Turn Cocks are a 'sure hit' with the largest industrial concerns in this country because they save their own cost shortly after installation by eliminating any chance of leakage through the valves—and because they give continuously efficient and satisfactory service for years afterward.

"No one has a right to the claim of being economical and efficient if he has not tried the Homestead."

⁂

Power Transmission Equipment

In a recent issue of "Hill Clutch Equipment," appears the following article on power distribution, which is indicative of the worth of this little periodical to the managers and superintendents of our clay plants.

The Burton-Townsend Company, at Zanesville, Ohio, has had long experience in brick manufacture, and has been thru all the vicissitudes of the game, including the annoyances, delays and losses resulting from troublesome transmission machinery. There is meaning, therefore, in the superintendent's statement that the performance of the new plant makes him wish he had none but Hill Clutch equipment anywhere.

The new plant produces paving brick, as also various grades and kinds of building brick, both cut and pressed. Power is required in two principal departments—preparation of material, and forming the brick. One engine drives the entire plant, by belt to a main jack shaft. Just beyond the engine room wall is the sheave from which power is delivered by rope drive to the secondary line shaft for the crusher, grinders, etc., which prepare the materials. Direct extension of the jack shaft, forms the main line shaft for the brickmaking machinery.

The jack and main line is carried in Hill Collar Oiling pillow blocks, on wedge-adjusting base plates anchored to high concrete piers. Especially substantial is the support for the head shaft, by bearings close to the main receiving pulley.

The drive to the secondary line shaft has seven wraps of 1½-inch rope, tension being maintained by a horizontal carriage traveling a track above the slack (upper) run of the drive.

Off this secondary line are taken the principal units of power—for the crusher and the two dry pan grinders. The line is carried high overhead, giving good lead for belts to machinery above, as well as to the three heavier units below.

Cars of shale from the quarry are hauled up an incline to dump their contents into a hopper, above the crusher. The crusher is not operated continuously, and as it is the user of largest power in this department, its drive is arranged for utmost convenience and economy by having the driving pulley at the line shaft mounted upon a quill, with Smith Type Hill clutch connections. The quill, carried in its own bearings, has no contact with the shaft passing thru it, and therefore entails neither wear nor friction losses when out of operation by release of the clutch. Thus this unit of power is wholly isolated when the clutch is open, but operates as an integral part of the line shaft when the clutch is closed. The independent quill bearings afford close and rigid support for the quill, relieving the shaft of all bending stresses due to the heavy belt. The quill device is the best of mechanical arrangements for handling any important power unit which cannot be placed at the end of the shaft, for similarly complete isolation by a cut-off clutch.

Here, then, is a complete transmission system of perfect directness and utter simplicity, yet thoroly mechanical in detail and in general—every feature of Hill clutch grade, from collar oiling bearings and American system rope drive, to quill outfit and Smith Type Hill friction clutches.

If you are interested in receiving this class of information regularly, you can get it free by sending your name and address to the Hill Clutch Company, of Cleveland, Ohio.

66.05
C

BRICK and CLAY RECORD

Why Do You Let Your Gears Wear Out?

Scores of Clay Plants are using

RINO LUBRICANTS

PREVENT WEAR on GEARS and PINIONS

One of the often recurring, costly delays incident to the operation of clay plants, is due to the very frequent necessity of replacing worn or broken gears.

Those big gears on the Pan, the Auger, the Pug—the ones "that suffer the most from horsepower and dusty grit"—all wear out comparatively fast.

When the gears get too thin, or when they crack or strip the teeth suddenly—tackle must be rigged, keys knocked out, sometimes boxes re-babbitted—and new gears set in. This operation is very expensive in material, but chiefly in time, when the balance of the plant waits for the repair.

A great portion of this expense and delay can be eliminated—in fact it is being eliminated in dozens of clay plants—by using RINO GEAR SHIELD. It is a compound that lubricates adequately. Its adhesive quality is preserved under any and all conditions—that is, it will not run or drip—it stays where it is put. It forms a film or shield over the teeth and actually prevents wear. It greatly reduces noise.

Ask for, get a trial can—write today

The Ohio Filler & Shield Co.
Columbus, Ohio

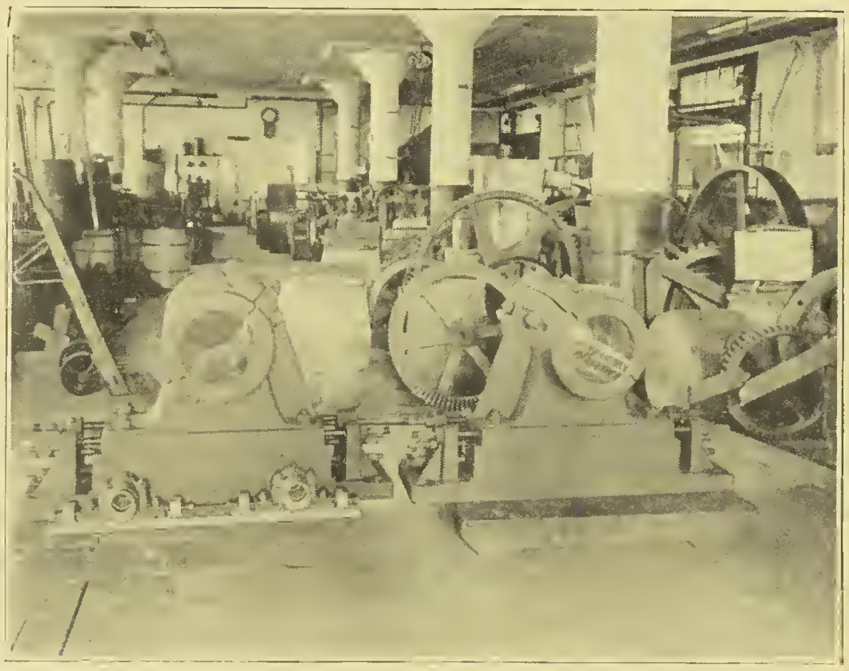
Vol. 51, No. 13 Chicago December 18, 1917

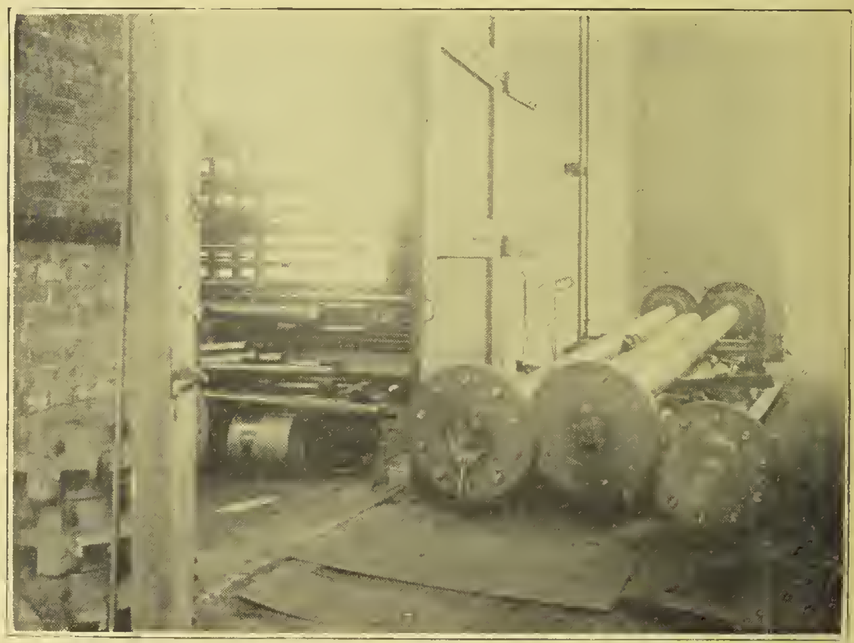
WELLER
MADE
CHICAGO

Do You Want

Machinery that will stand up and run 24 hours a day—every day in the week—machinery that will stand up and do your work no matter how hard your service or overload.

Every shut-down means so many dollars dead loss to you. Better avoid losses by using big heavy machinery that will stand up.





We know how and do build the best

Elevating, Conveying and Power Transmitting Machinery

Weller Mfg. Company, Chicago

1820-1856 No. Kostner Ave.

SAY I SAW IT IN
BRICK AND CLAY RECORD

Mr. Clay Worker:

A condition of unusual import is confronting the manufacturers of today.

Scarcity of labor and fuel, increased cost of wages, war legislation and control, high cost of repair and construction materials with their incident delay in delivery, and a shattering of works and sales organization, are factors with which every clay worker has to contend as never before.

Efficient methods and devices are the salvation of every clay worker who expects to keep his works in successful operation, whether he is making clay goods or refractory materials.

Fuel costs in the making of power, burning and drying must be reduced. Yards must be able to operate to capacity, with a minimum amount of experienced and trained labor.

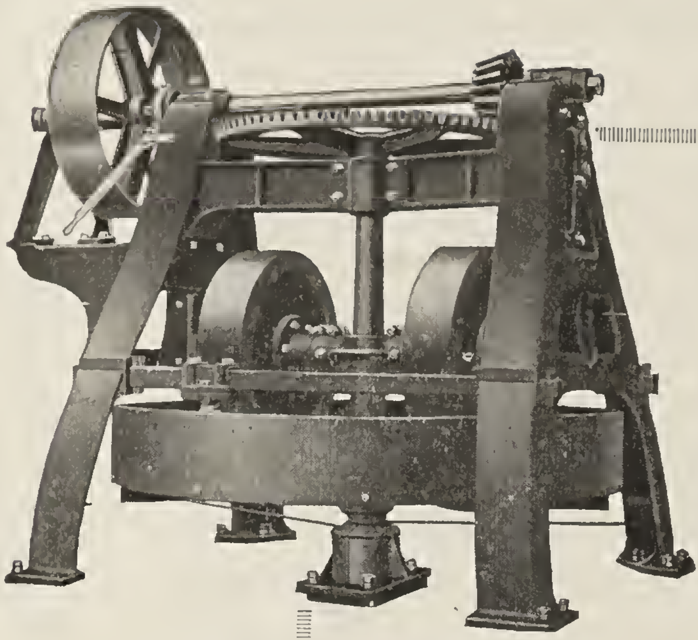
Modern labor-saving methods which were considered superfluous, are today an absolute necessity.

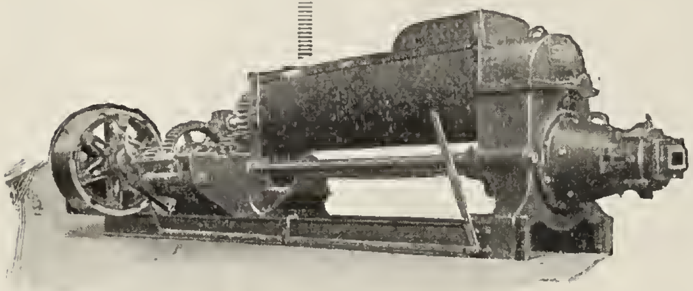
Efficiency is the watchword which will keep factories going and ***win the war.***

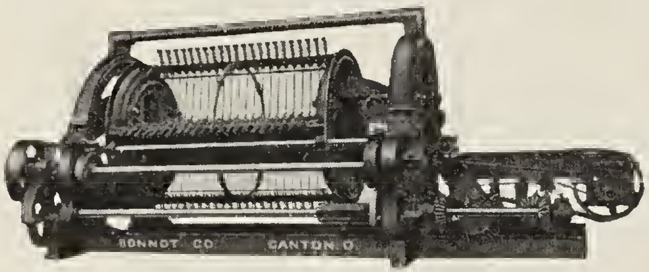
We are prepared to offer our services as engineers to the manufacturers who wish to make the most of existing conditions, tending toward the economical and efficient operation of their plants.

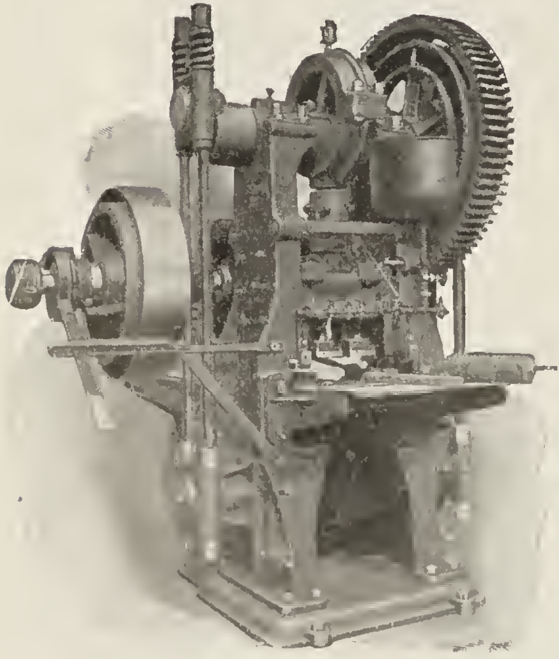
Consultation is earnestly solicited.

Trautwein Dryer & Engineering Co.
417 So. Dearborn Street
Chicago









A Machinery Line That Holds

Every Unit a B-O-N-N-O-T From First to Last

Clay storage—Conveyors
Grinding Pans—Elevators
Screens—Feeders
Pug Mill
Auger
Cutters
Cars
Dryer
Kiln
Equipment and Engineering

If it is **all** Bonnot's, then it is going to last longer—it is going to produce more ware each day each year—it is going to cost you less for replacements and repairs—it is going to run smooth, quiet, with small power expenditure—it will be SATISFACTORY—A BONNOT STANDARDIZED PLANT.

Let us tell you all about these plants and the machinery units that compose them.

The Bonnot Company
Canton, Ohio

Let Us Standardize Your Plant

A Leviathan which has been in continual operation in a Texas brick yard since 1904

ON January 23, 1917, the owner of this belt, a Texas brick manufacturer, wrote us the following letter:—

> "Gentlemen:
>
> We bought an 18″ 8 ply main drive belt from you in April, 1904 and have been running it continuously since that date.
>
> The belt has given entire satisfaction and we have only had to tighten it three times since we have been using it.
>
> Yours truly"

And we don't believe we would add anything to it.

LEVIATHAN AND ANACONDA BELTS

LEVIATHAN AND ANACONDA
ELEVATING
TRANSMITTING
CONVEYING
BELTING

for, Transmitting, Conveying and Elevating

MAIN BELTING COMPANY
PHILADELPHIA

LEVIATHAN AND ANACONDA
ELEVATING
TRANSMITTING
CONVEYING
BELTING

New York Chicago Pittsburgh Atlanta San Francisco

Birmingham, England Paris, France Bulle, Switzerland Kristiana, Norway Johannesburg, South Africa Petrograd Russia
MAIN BELTING CO. OF CANADA, LTD., Montreal, Toronto Havana, Cuba HONOLULU IRON WORKS CO., Honolulu

The True Measure of Value—

It isn't what we say the Underwood System will do—it is what the users say that it **does** do.

Performance in action, "under fire" if you please,—of the Underwood Producer Gas Burning System (Patented), must be good, it must do for the user exactly what we say it will do—and more,—and—it is doing just that.

Some few years ago when the Underwood system of applying producer gas to periodical kilns was first developed from a theory into an installation, we noted the remarkable results of operation, and stated in guarantee just what the system would do on each particular plant making investigation.

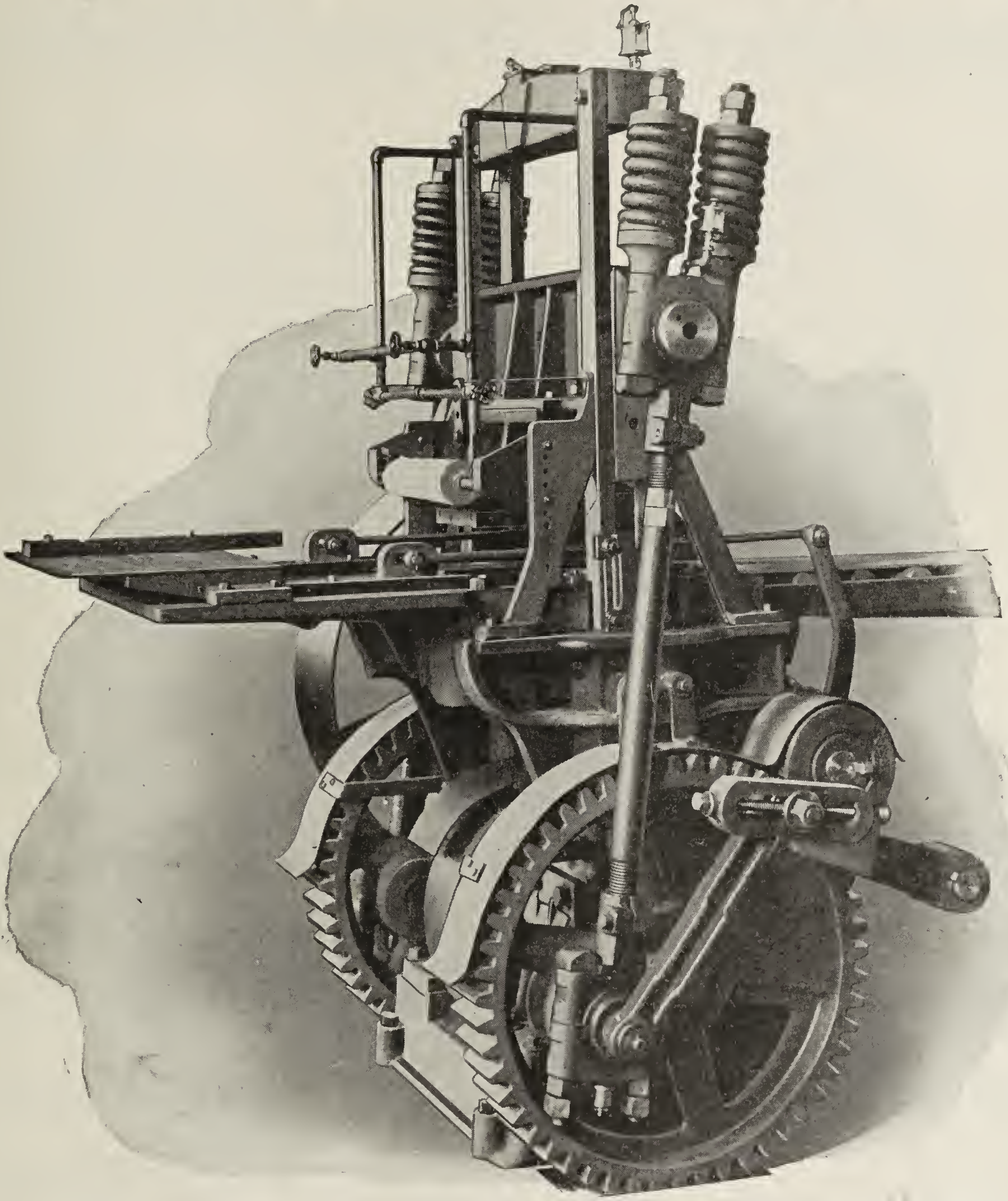
Previous to each installation we said and guaranteed —"The Underwood system will cut your fuel costs and it will save labor. It will burn more uniform ware; it will necessitate less kiln repair; it will burn the ware in less time." And today—NOW—the USERS say that **it does do just that**—and if you will ask us we'll **prove** it to you. Do it.

The Meco Producer Gas Fired Dryer is on a par in performance with the Underwood System.

The Manufacturers Equipment Co.
Dayton, Ohio, U. S. A.
Selling Representatives for J. C. Steele & Sons' Complete Machinery Line

SAY I SAW IT IN BRICK AND CLAY RECORD

FOR FURNACE BLOCKS
Large Fire-Clay Shapes and Also 9-Inch Fire Brick
Keystone Repress Number Four



STEEL CROSS-HEAD Both upper and lower cross-heads are of steel and of such dimensions as put these parts beyond breakage. The wearing surfaces are ample, those in the cross-head being babbitted where working against the steel guides.

A Steadily Increasing Number of Users for these Represses

Chambers Brothers Co. Philadelphia, Pa.

SAY I SAW IT IN BRICK AND CLAY RECORD

BARBER INTERESTS BUY I

FO

Mammoth New Hollow

MR. O. C. BARBER
President—Diamond Match Co.
President—O. C. Barber Allied Industries Co.

THIS ORDE

The Largest Capacity Hollow-ware Outf
Tunnels of Producer Gas Fired Dryer
Continuous Kiln on the Continent Incl

"International Service" Will Save Them
What Would Such

International Cla
DAYTON

SAY I SAW IT IN BRICK AND CLAY RECORD

TERNATIONAL EQUIPMENT

THEIR

ware Plant at Canton, O.

MR. H. V. BRIGGLE
General Manager—
O. C. Barber Allied Industries Co.

MR. S. L. BRIGGLE
Secretary—
O. C. Barber Allied Industries Co.

COMPRISES

—Wire-Cut Brick Machinery—Sixteen
and the Largest Producer Gas Fired
ling Eight International Gas Producers

from 50 to 75% in Fuel and Maintenance
Saving Mean to You?

y Machinery Co.

OHIO, U. S. A.

SAY I SAW IT IN BRICK AND CLAY RECORD

You Know This—

You have to dry your ware

Then—Why don't you use the best dryer that it is possible to get?

"Proctor" DRYERS

They are machines, real drying machines that are today drying all kinds of ware with such small losses and so rapidly, that the recital sounds like fairy lore.

The theory of perfect drying is followed out in practice and is remarkably successful.

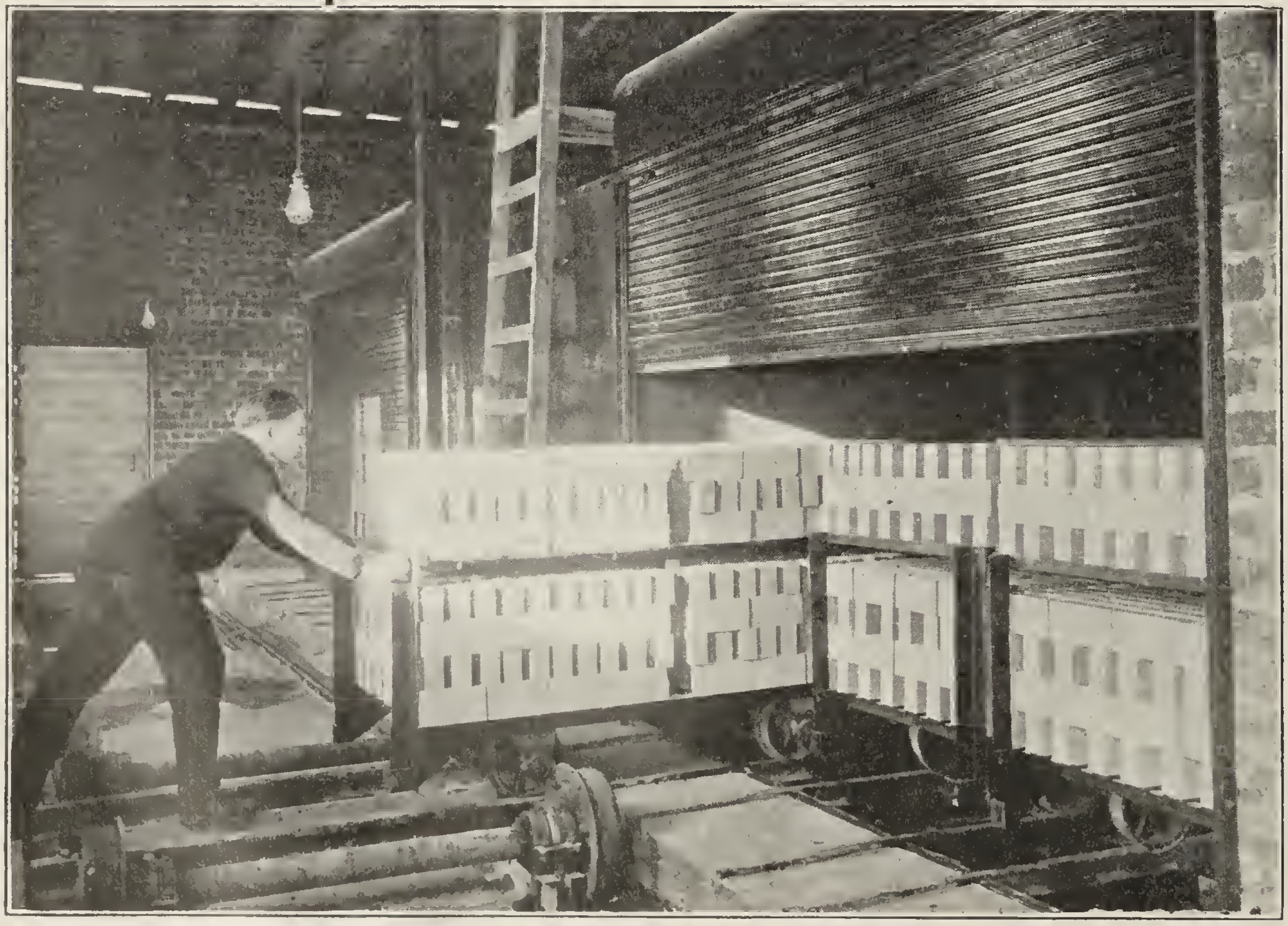
First the ware is raised to a drying temperature without drying—then it goes into the next compartment, and the real drying is started, but the moisture moves from the **inside** to the **outside,** and the rules for safety in drying clay ware are satisfied.

Bone dry ware is produced with safety, with speed and with economy, in a small, compact drying machine that is revolutionizing drying procedure.

Among the big, progressive, substantial, firms are found the users of "Proctor's" and they are satisfied with results.

If you are having difficulty, if you want to improve, to get more perfect ware, at less cost—if you have the **will**—we have the **way.** It is the "Proctor" way.

Get the Catalog



The Philadelphia Textile Machinery Co.

Philadelphia, Pa.

Sixth Street & Tabor Road

Photograph shows a Harbison-Walker installation of Proctors at Strasburg, Ohio

Erie Revolving Shovels

Bradford Pressed Brick Co.

At the Bradford Shale Products Co. Pit

Bradford Fireproofing Co.

"The Erie Shovel is THE shovel!" Total repair expense for their three Eries, $44

"When we placed the first Erie in our pit, we did not think a machine the size of the Erie could have enough power to handle our stiff material. But after using the shovel for a month we placed an order for two additional Eries. These two later machines are giving us the same satisfaction, and in our opinion the Erie Shovel is THE shovel.

"We now have an Erie working at each of our three plants—in the pits of the Bradford Shale Products Company, Bradford Pressed Brick Company, and Bradford Fireproofing Company.

"We are more than satisfied with our Eries. If we had not had them during the past year, we would not have been able to run, on account of labor shortage.

"Our Bradford Pressed Brick Company plant has the biggest production. The Erie is digging about 300 cubic yards a day and could do much more, but this is sufficient to take care of our daily output. We have only one man, the engineer, operating the shovel. Coal and labor together amount to about $8.00 per day." Bradford Fireproofing Company, Bradford, Pa. This letter is signed by Edw. T. Conley, the secretary of the company.

What kind of steam shovel do YOU need for YOUR pit?

Are you looking for a machine that gives a big output for its size, so as to keep down your plant investment? The Erie Shovel will give you far more clay or shale than any other machine of equal cost—far more than any other 20-ton shovel. Five or six hundred cubic yards a day is not unusual for the ¾-yd. Erie, in the hardest brickyard digging. In many brickyards and quarries the Erie Shovel is doing work that would otherwise require a larger and much more costly shovel.

Are you looking for RELIABILITY—assurance of a steady supply of material from the pit? Then just consider the trifling repairs that the Bradford people have had for their 3 Erie Shovels during the past year—only $44 total for all three! Although there are more than 400 Eries in service, our repair business is actually next to nothing—

—because the Erie is built **stronger** than any other 20-ton shovel through and through; stronger truck frame, stronger boom, stronger dipper-handle, larger bearings; more metal and better metal at every point of wear and strain.

There are many other features of this shovel that appeal to the Bradford Fireproofing Co., and will appeal to YOU—such as the long reach, that saves shifting of track and spotting of cars; the simple automatic one-man control, by three levers, that makes the labor problem simple; the easy accessibility of the operating machinery; the perfectly balanced arrangement of the whole shovel. Get full information on the steam-shovel question—

Find out which is the best revolving shovel on the market.

We would like to send you our Bulletin "B." You will find it interesting. Write for a copy.

Ball Engine Co., Erie, Pa.

Records of Performance That Guarantee Satisfaction

SERVICE Motor Trucks have made efficiency and economy records over a period of seven years for thousands of satisfied Service Truck owers. They will do the same for you in *your* line of business.

Service Trucks are the most economical for both heavy duty hauling or light delivery. From the smallest to the largest size they excel any of the "Dominant Ten" Motor Trucks in economy of operation—strength—durability and power.

Service
Motor Trucks

There is a Service Truck built to satisfy *your* requirements—Service 20% super-strength in every detail without excess weight means long life and durable service. Service engines show 11% greater power than any of the other "Dominant Ten" Motor Trucks.

Service specialized construction—carefully selected materials and proportioning the chassis design to secure the utmost strength with minimum strain over every working part make the Service Motor Trucks the logical choice of every shrewd and careful truck buyer.

Service Motor Trucks are furnished in six chassis types. Whatever your requirements are, there is a Service Truck built for you.

Service Motor Truck Company Dept. C-12 Main Office and Factory, **Wabash, Ind.**

Send for these booklets:
Catalog
The Service 13 Pointer
Specialized Folder

Chicago, Ill.
New York, N. Y.
Norfolk, Va.
St. Louis, Mo.
Louisville, Ky.
Omaha, Neb.
Boston, Mass.
Brooklyn, N. Y.
Newark, N. J.
Indianapolis, Ind.
Buffalo, N.Y.
Salt Lake City, Utah
Milwaukee, Wis.
Bridgeport, Conn.
Des Moines, Iowa
Baltimore, Md.
Columbus, Ohio
Cincinnati, Ohio
Youngstown, Ohio
Canton, Ohio
Pittsburgh, Pa.
South Bend, Ind.
Washington, D.C.
Savannah, Ga.
New Orleans, La.
Hoboken, N. J.
Philadelphia, Pa.
Rochester, N. Y.
Tulsa, Okla.
Nashville, Tenn.
Detroit, Mich.
Denver, Colo.
Knoxville, Tenn.
Memphis, Tenn.
Birmingham, Ala.
Dayton, Ohio
Kansas City, Mo.
Cleveland, Ohio

The Multithermograph

Six Temperature Records all on one chart, each in a different color. Made by the one instrument having only ONE galvanometer.

Used exclusively with

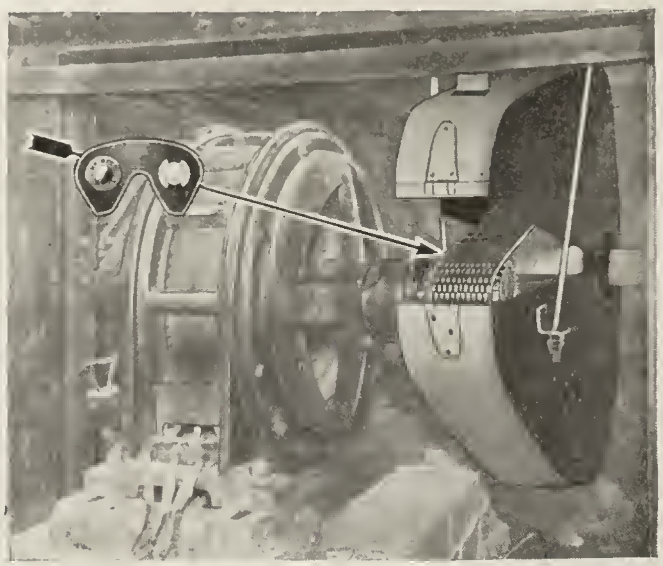
Heraeus LeChatelier Pyrometers

"The Ultimate Pyrometer"

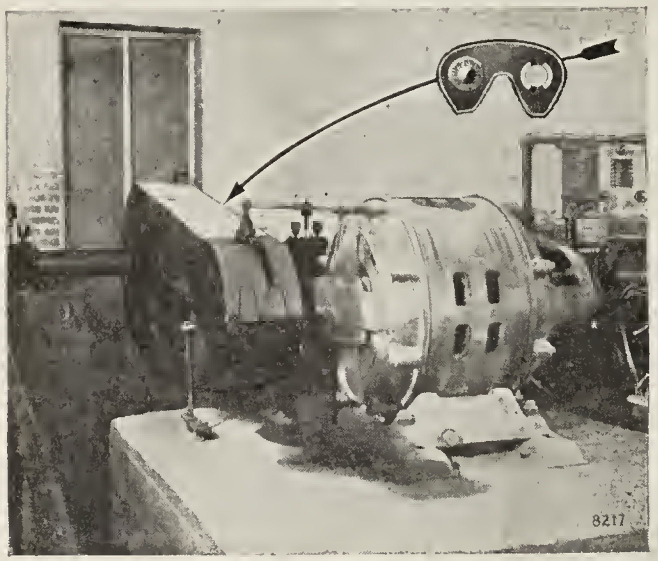
Let us refer you to some who have them.

Charles Engelhard 30 Church Street
NEW YORK

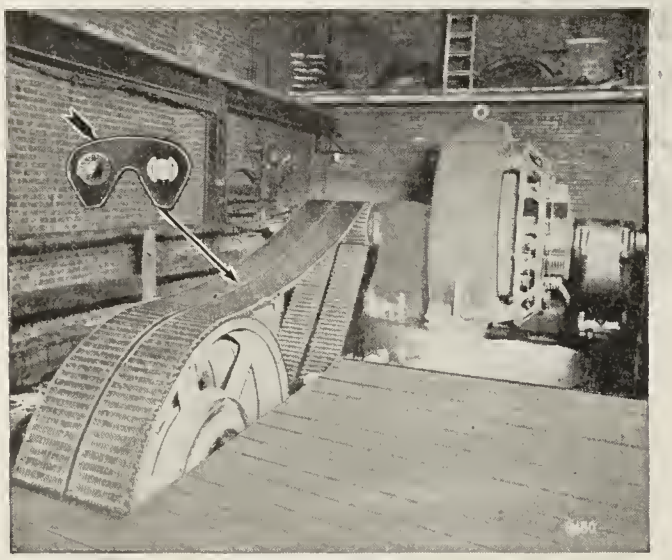
SAY I SAW IT IN BRICK AND CLAY RECORD



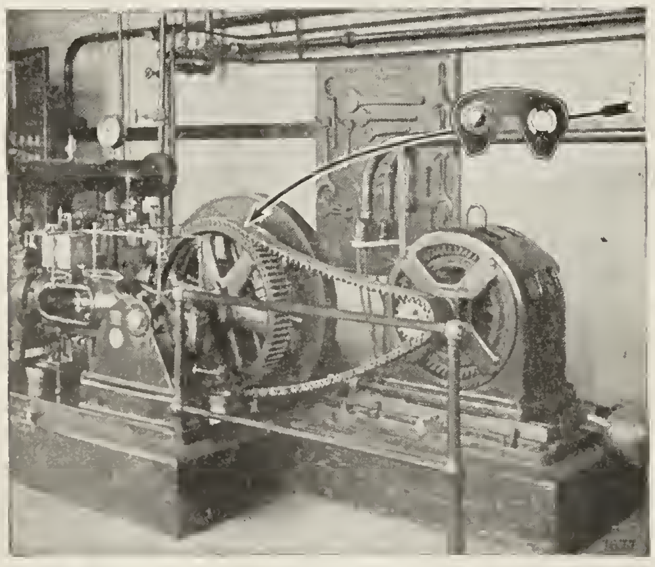
Drive at Streator Clay Mfg. Co., Streator, Ill.



100-H. P. Lineshaft Drive Operating Pug Mill Crusher.



300-H. P. Drive.



25-H. P. Drive.

LINK-BELT
Silent Chain Drives

For Every Condition of Power Transmission Service

THE present war on waste can be aided right in your own mill or factory by adopting the world's most efficient power transmitter—Link-Belt Silent Chain. Can you afford, after purchasing a highly efficient motor, to connect it to your machine or lineshaft with a transmission belt that will waste from 10 to 25 per cent of its power, when a Link-Belt Silent Chain Drive will transmit 98.2 per cent of the power, under any conditions of load? It will help you increase your production—there can be no slip, no lost motion.

Link-Belt Silent Chain

"Flexible as a belt—Positive as a Gear—
More Efficient than either"

These 12 words tell the whole story. There can be no slip—no lost power—and therefore machines are kept running at top efficiency.

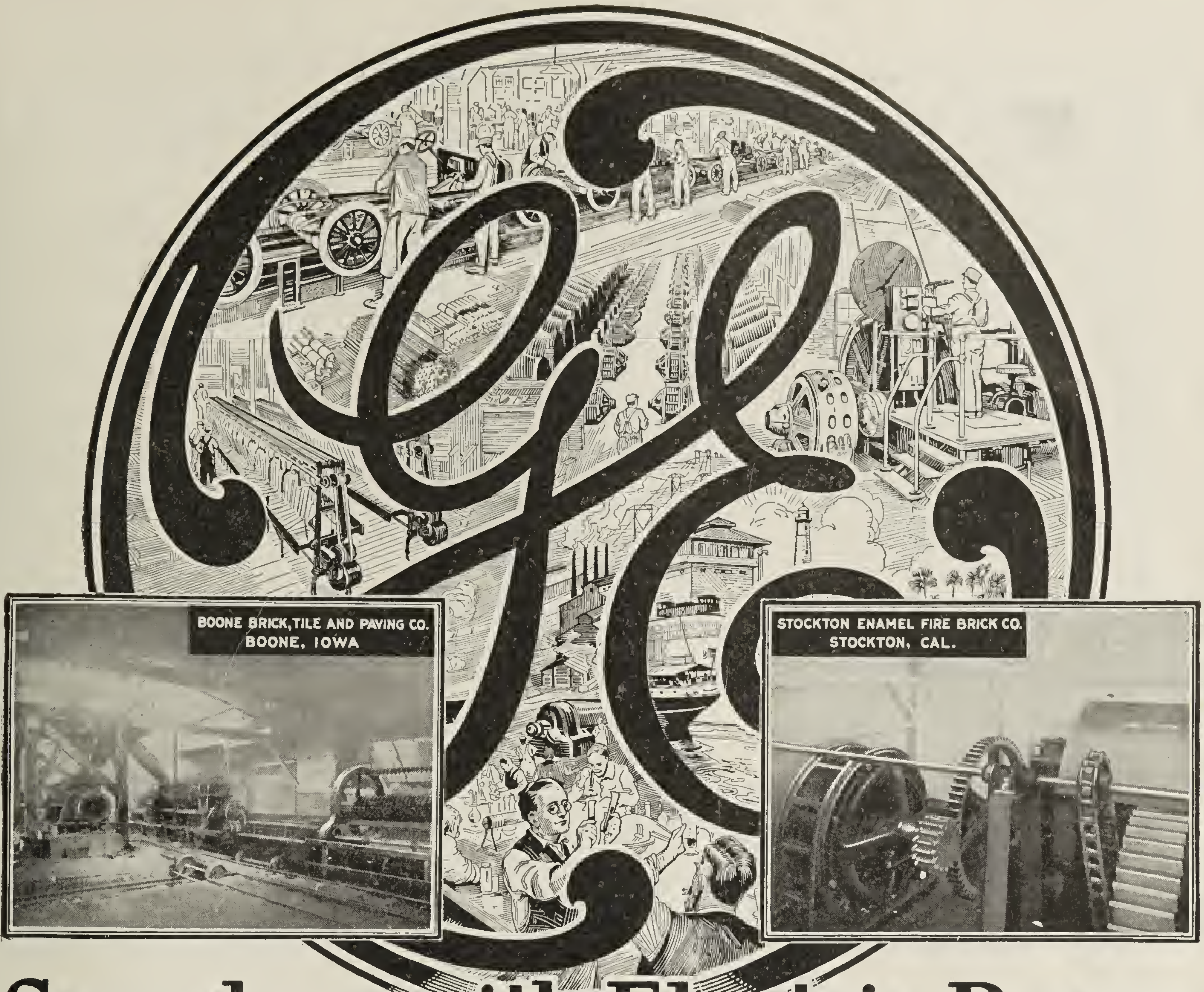
Let us show you what we can do for you.
Address nearest office.

LINK-BELT COMPANY

PHILADELPHIA CHICAGO INDIANAPOLIS

New York - - - 299 Broadway
Boston - - - - - 49 Federal St.
Pittsburgh - - - 1501 Park Bldg.
St. Louis, Central Nat'l Bank Bldg.
Buffalo - - - 698 Ellicott Square
Wilkes-Barre, 2nd Nat'l Bank Bldg.
Cleveland - 429 Rockefeller Bldg.
Detroit - - 732 Dime Bank Bldg.
Minneapolis - - 418 S. Third St.
Kansas City, Mo., 407 Finance Bldg.
Toronto, Can.

Seattle - - - - - - - - 576 First Avenue, S.
Portland, Ore. - - - - - 1st and Stark Sts.
San Francisco - - - - - - 461 Market St.
Los Angeles - 161 and 163 N. Los Angeles St.
Denver - Lindrooth, Shubart & Co., Boston Bldg.
Louisville, Ky. - Frederick Wehle, Starks Bldg.
Knoxville, Tenn. - D. T. Blakey, Empire Bldg.
Birmingham, McCrossin & Darrah, Am. Tt. Bldg.
New Orleans, C. O. Hinz, Hibernia Bank Bldg.
Charlotte, N. C., J. S. Cothran, Com'l Bank Bldg.
Canadian Link-Belt Co., Ltd.


BOONE BRICK, TILE AND PAVING CO.
BOONE, IOWA
STOCKTON ENAMEL FIRE BRICK CO.
STOCKTON, CAL.

Speed up with Electric Power

Leading Brick Plants repeatedly order additional G-E Motor Drives

HERE are some of the ways in which modern industry has been speeded up by putting electric power to work in the right place.

Metal mines have boosted output to meet world-wide demands. Great central power plants in place of small local plants in coal mining areas now supply cheaper electric power per ton output for each mine. All tonnage records have been smashed in the steel industry. Greater automobile output has lowered prices and given better road transportation. More and better cloth has been produced at lower power costs.

The engineering problems solved in putting electric power to work in these and other industries were many and intricate. Production of electrical equipment suited to this work and in quantities required is an important part of this company's service to American industries.

Any problem involving the use of power can be simplified by the application of electricity. The General Electric Company is well equipped to lend valuable assistance in working out such problems and is glad to co-operate with manufacturers and engineers in every possible way.

G-E Motor Drive

GENERAL ELECTRIC COMPANY

General Office, Schenectady N.Y. Sales Offices in all large cities

7167

SAY "I SAW IT IN BRICK AND CLAY RECORD"

A Mile Away ▪ YOU ▪ *Can* CHECK Your Kiln Temperatures

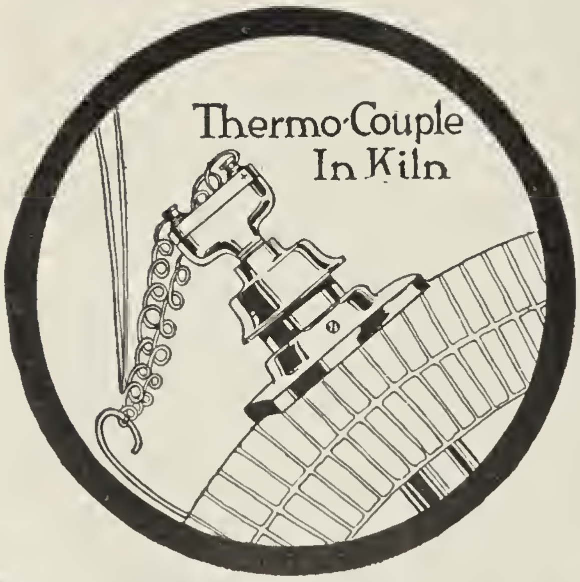
DISTANCE makes no difference. The readings of the Brown High Resistance Pyrometer are always accurate. That's because the internal resistance is hundreds of ohms. In your warm superintendent's office you can instantly read the temperatures of any kiln and find out from a permanent chart record what happened every minute of the night before.

Make your kiln burns uniform. Get as much from one burn as you did from two before, by using Brown Pyrometers. One well known brick plant used to get 40% firsts; they installed Brown's and now get 95% firsts.

You can't get away from it, that such production means coal and labor saved. That's what nearly 300 other live brick superintendents found out when they joined the Brown ranks and brought kiln burning down to an exact science.

Start in now on the saving propaganda. Order your Brown equipment today and get it in fine working order for a booming business early next spring. Shell shops, airdomes and munition factories take millions of bricks and the profit belongs to you.

Write to the Brown Instrument Company, Philadelphia, or to one of their district offices in New York, Pittsburgh, Detroit or Chicago, for full information now.



Brown Pyrometers

THE AMERICAN CLAY MACHINERY Co.
BUILT RIGHT RUN RIGHT
A QUALITY ABOVE ALL OTHERS
"BUILT RIGHT RUN RIGHT"

Quality Will Win

It is predicted that the American Air Ships will win the war for America.

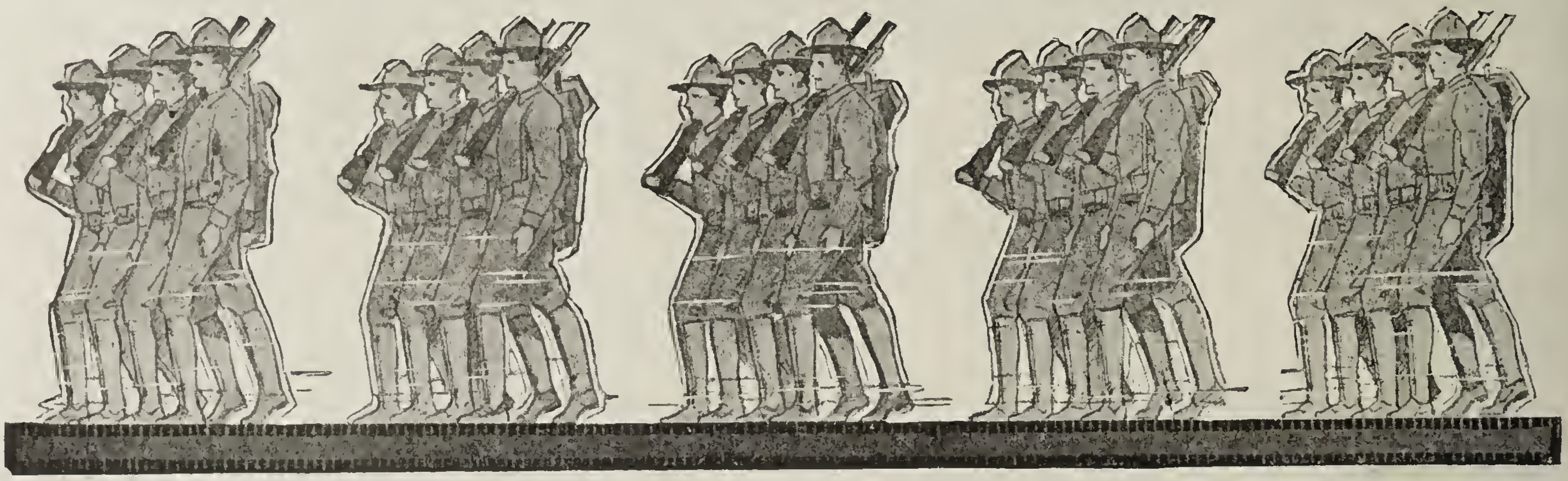
We are building a Quality of Clay Working Machinery "Above all Others" and this "American Quality" will help the Clay Workers of the Country to win their fight on high manufacturing costs.

The American Line has added strength and staying qualities; higher production possibilities, reduced power consumption and lowered repair and labor costs.

The fight to reduce costs is a "fight to a finish." Either costs must be cut or production must be cut. We volunteer to help you in this fight.

Let us hear from you.

The American Clay Machinery Co.
Bucyrus -:- -:- Ohio

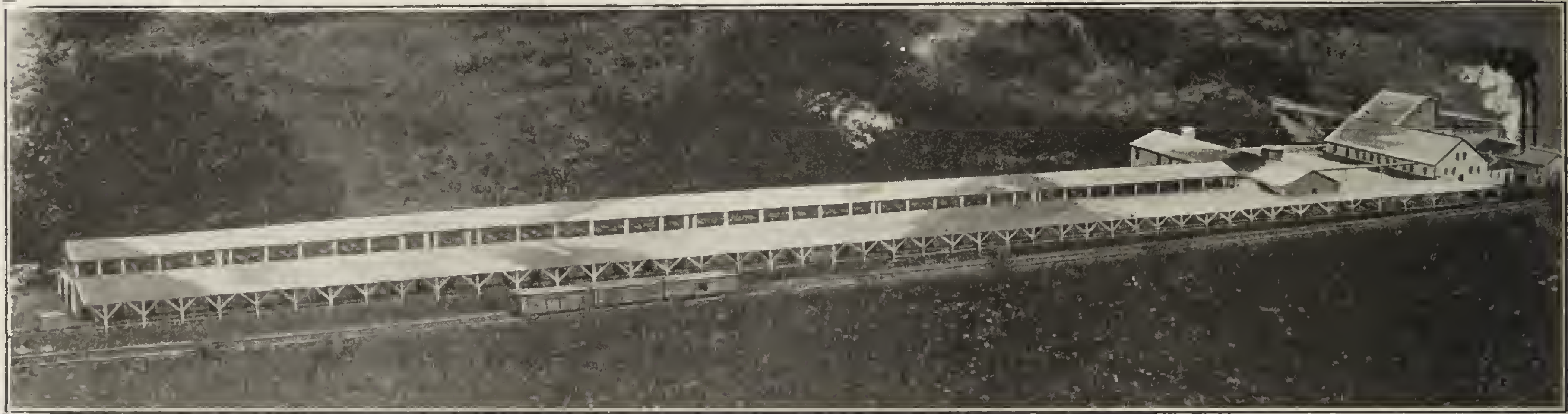


The American Firing Line

There is a big shortage of coal and a high price. Uncle Sam says: "Save Coal."

The Clay Products Plants could do a lot to help Uncle Sam—and themselves, if they would use less coal so that the coal saved could go to others and the money saved to you.

In brick alone there are about ten billion brick made in the U. S. each year with a coal consumption of five million tons in the burning kilns.



If these brick were all burned in Haigh Continuous Kilns, there would be a saving of over two and a half million tons.

This saving would help a lot in—

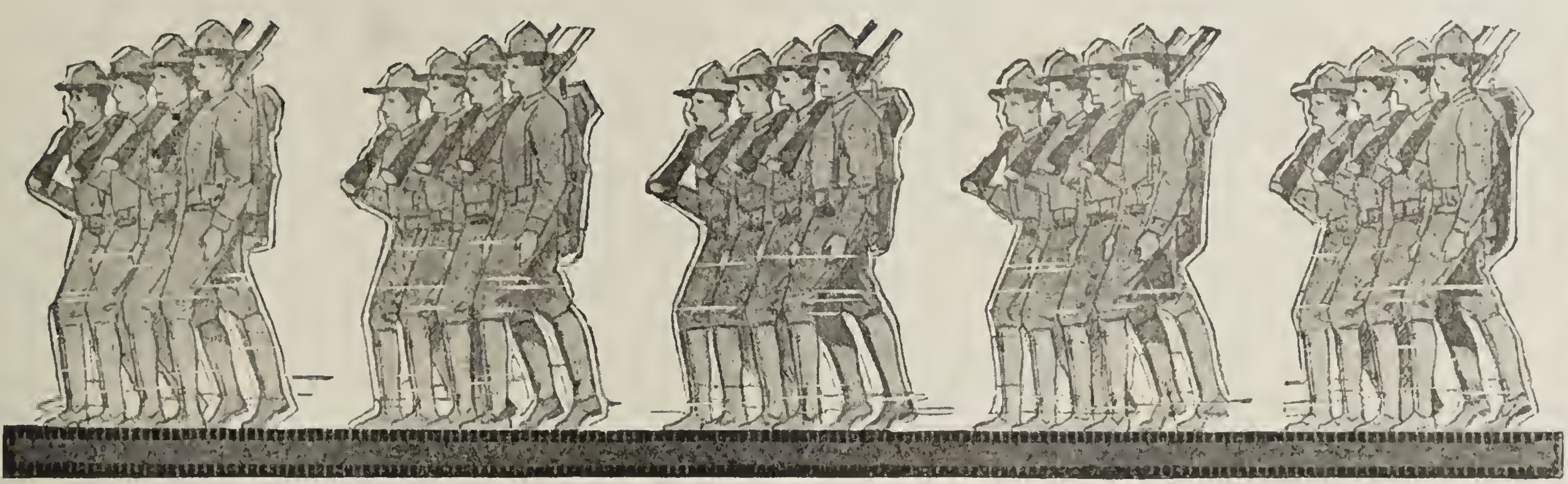
Relieving the coal shortage.
In winning the war.
In reducing your costs.

Are you doing your part to help Uncle Sam and yourself in "Coal Conservation."

Let us send you particulars. The Haigh Kiln will pay for itself and will continue to pile up profits for you for the rest of your life.

The American Clay Machinery Company
Bucyrus, Ohio

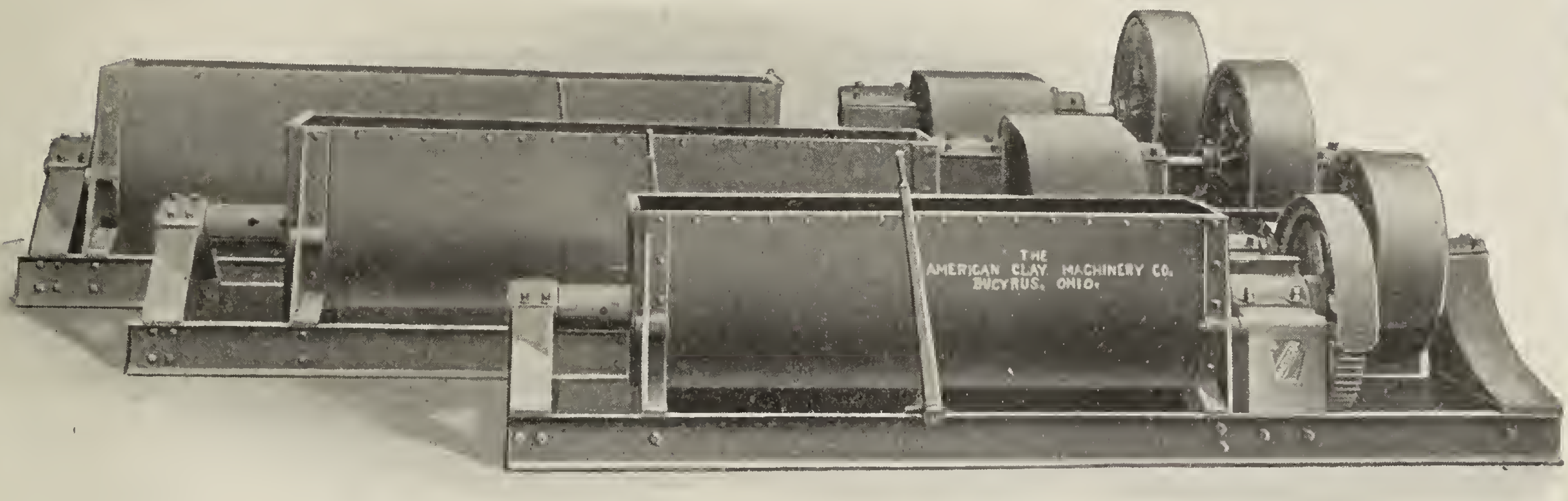
SAY "I SAW IT IN BRICK AND CLAY RECORD"



The American Line of Defense

The Clay Workers of the country need a "Line of Defense" in fighting increasing costs of production. The "American Line of Defense" for the Clay Worker is the "Built Right, Run Right" line of machinery. We have just issued a bulletin on Pug Mills and have a copy for you. These mills will help reduce cost by handling your clay quicker, preparing it better and saving in power.

We have added more knives and reduced their pitch, insuring more thorough pugging; knives quickly adjusted. Bearings are marine and ring oiling—kept free from dirt. Machines increased in weight. Discharge at either end. Single geared reducing power.



Get full description.

The American Clay Machinery Company

Bucyrus, Ohio

Brick and Clay Record Buyers' Directory of Manufacturers of Machinery, Equipment and Supplies

See Table of Contents Page for Advertisers Directory

Aerial Tramways.
Broderick & Bascom Rope Co.

Automobile Trucks.
Duplex Truck Co.
Federal Motor Truck Co.
Kissel Motor Car Co.
Service Motor Truck Co.

Babbitt Metal.
Cleveland Alloye Co.

Barium Carbonate.
Rollin Chemical Co.
Roeseler & Haselacher Chem. Co.

Barrows and Trucks.
American Clay Machinery Co.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Chase Fdry. & Mfg. Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Steele & Sons, J. C.
Lakewood Engineering Co.
Wallace Mfg. Co.
Weller Mfg. Co.
Wellington Machine Co.

Barytes, Carbonate of.
Roessler Hasslacher Chem. Co.
Rollin Chemical Co.

Belting.
Gandy Belting Co.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.
Hettrick Mfg. Co.
Main Belting Co.
Quaker City Rubber Co.
Sawyer Belting Co.
Scandinavia Belting Co.
Victor Balata & Textile Belting Co.

Belt Conveyors.
Barber-Greene Co.
Gandy Belting Co.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.
Hettrick Mfg. Co.
Link-Belt Company.
Manufacturers Equipment Co.
Morse Chain Co.
Quaker City Rubber Co.
Scandinavia Belting Co.
Victor Balata & Textile Belting Co.
Weller Mfg. Co.

Belt Dressing.
Cling-Surface Co.
Hettrick Mfg. Co.
Sero Specialty Co.
Victor Balata & Textile Belting Co.

Belt Fasteners.
Crescent Belt Fastener Co.
Victor Balata & Textile Belting Co.

Boilers.
(See Engines and Boilers.)

Brick Conveyors.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Fate Co., J. D.
Link-Belt Company.
Manufacturers Equipment Co.
Mathews Gravity Carrier Co.

Brick Handling Machinery.
Mathews Gravity Carrier Co.

Brick Machines.
(See "Dry Press," "Stiff-Mud" and "Soft-Mud.")

Cables and Cableways.
Broderick & Bascom Rope Co.

Cars.
Chase Fdry. & Mfg. Co.
Fate Co., J. D.
International Clay Mchy. Co.
Lakewood Engineering Co.
Manufacturers Equipment Co.
Orenstein-Arthur Koppel Co.
Standard Dry Kiln Co.
Trautwein Dryer & Eng. Co.
Watt Mining Car Wheel Co.
Weller Mfg. Co.
Youngstown Steel Car Co.

Car Movers.
Marion Mach., Fdry. & S. Co.

Castings.
American Clay Machy. Co.
Bonnot Co.
Chambers Bros. Co.
International Clay Mchy. Co.
Link-Belt Company.
Manufacturers Equipment Co.

Chain.
Link-Belt Company.
Moree Chain Co.
Union Chain & Mfg. Co.

Clay Feeders and Mixers.
American Clay Machy. Co.
Bonnot Company.
Fate Co., The J. D.
Chambers Bros. Co.
Freese & Co., E. M.
Manufacturers Equipment Co.
Marlon Mach., Fdry. Sup. Co.
Steele & Sons, J. C.

Clay Gatherers.
Eagle Iron Works.
Sauerman Bros.
Schofield-Burkett Cons. Co.

Clocks.
Hardinge Bros., Inc.

Clutches.
Hill Clutch Co.
International Clay Mchy. Co.
Link-Belt Company.

Coloring.
Williame & Co., C. K.

Conveying Machinery.
(See Elevators and Conveyors.)

Crushers and Pulverizers.
American Clay Machy. Co.
American Pulverizer Co.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
K-B Pulverizer Co.
Manufacturers Equipment Co.
Wallace Mfg. Co.

Cutters, Automatic Rotary.
American Clay Machy. Co.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Marlon M., Fdry. & S. Co.
Steele & Sons, J. C.
Wallace Mfg. Co.

Cutting Wires.
Manufacturers Equipment Co.

Dies.
American Clay Machy. Co.
Bonnot Co.
Chambers Broe. Co.
Fate, J. D., Co.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Weller Mfg. Co.

Digger.
Buckeye Traction Ditcher Co.

Disintegrators.
American Clay Machy. Co.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equip. Co.
Marion M., Fdry. & Sup. Co.

Drills.
Keystone Driller Co.
Sanderson-Cyclone Drill Co.

Dryers.
American Clay Machy. Co.
Bonnot Co.
Boss Co., J. C.
Chambers Bros. Co.
Drymore Syetem.
Fate, J. D., Co.
International Clay Machy. Co.
Jackson & Church Co.
Lakewood Engineering Co.
Manufacturers Equipment Co.
Smith Co., Claude.
Philadelphia Textile Machy.
Standard Dry Kiln Co.
Steele & Sons, J. C.
Trautwein Dryer & Eng. Co.
Wellington Machine Co.

Dryers (Sand).
American Clay Machy. Co.
Bonnot Company.
Fate Co., J. D.
Jackson & Church Co.

Dry Pans.
American Clay Machy. Co.
Bonnot Co.
Chambers Bros. Co.
Eagle Iron Works.
Fate Co., J. D.
Freese & Co., E. M.
Jackson & Church Co.
International Clay Mchy. Co.
Manufacturers Equipment Co.

Dry Press Brick Machines.
American Clay Machy. Co.
International Clay Mchy. Co.

Dynamos and Generators.
General Electric Co.
Lincoln Electric Co.
Westinghouse El. & Mfg. Co.

Electrical Industrial Trucks.
Elwell-Parker Electric Co.
Orenstein-Arthur Koppel Co.

Elevators and Conveyors.
American Clay Machy. Co.
Barber-Greene Co.
Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
Gandy Belting Co.
International Clay Mchy. Co.
Link-Belt Company.
Main Belting Co.
Manufacturers Equipment Co.
Mathews Gravity Carrier Co.
Weller Mfg. Co.

Engines and Boilers.
American Clay Machy. Co.
Ball Engine Co.
Bonnot Co.
Freese & Co., E. M.
Jackson & Church Co.
Manufacturers Equipment Co.

Excavators.
Ball Engine Co.
Keystone Driller Co.
Link-Belt Company.
Sauerman Bros.
Schofield-Burkett Cons. Co.

Expansion Joints.
Barrett Company, The.

Explosives.
Du Pont Powder Co.
Hercules Powder Co.

Fans.
American Clay Machy. Co.
Blairsville Machine Co.
Bonnot Co.
Clarage Fan Co.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Trautwein Dryer & Eng. Co.

Feed Water Heaters.
Canton Grate Co.
Freese & Co., E. M.
Jackson & Church Co.

Filler (Paving).
Barrett Company, The.

Filter Presses.
American Clay Machy. Co.
Baird Machine & Mfg. Co.
Bonnot Co.
International Clay Mchy. Co.

Flower Pot Machinery.
Baird Machine & Mfg. Co.

Flue Cleaners.
Marion Mach. Fy. & Sup. Co.

Frogs and Switches.
Orenstein-Arthur Koppel Co.

Gas Producers.
International Clay Mchy. Co.
Wood & Co., R. D.

Gears.
Baird Machine & Mfg. Co.
General Electric Co.,
Link-Belt Company.

Granulators.
American Clay Machy Co.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Steele & Sons, J. C.
Wallace Mfg. Co.

Grates and Grate Bars.
Canton Grate Co.
Cyclone Grate-Bar Co.
Jackson & Church Co.
Manufacturers Equipment Co.
Marion Mach., Fdry. & S. Co.
Smith Co., Claude.

Gravity Carriers.
Mathewe Gravity Carrier Co.

Hoists.
American Clay Machy. Co.
Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
International Clay Mchy. Co.
Link-Belt Company.
Manufacturers Equipment Co.
Weller Mfg. Co.

Hollow Brick Machinery.
American Clay Machy. Co.
Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Steele & Sons, J. C.

Hose.
Goodyear Tire & Rubber Co.

Hydrometers or Moisture Indicators.
Taylor Instrum't Companies.

Insulating Brick and Powder.
Celite Products Co.

Kilns
American Clay Machy. Co.
Bonnot Co.
Boss Co., J. C.
Chambers Bros. Co.
Didier-March Co.
Fate Co., J. D.
International Clay Machy. Co.
Manufacturers Equipment Co.
Owens Continuous Tunnel Kiln Co., J. B.
Smith Co., Claude.
Webster & Kincaid.

Kiln Accessories.
Fate Co., J. D.
International Clay Mchy. Co.
Lakewood Engineering Co.
Manufacturers Equipment Co.
Smith Co., Claude.

Locomotives.
Baldwin Locomotive Works
Bell Locomotive Worke, Inc.
Fate Co., J. D.
General Electric Co.

Lubricants.
Garnet Mfg. Co.
Ohio Filler & Shield Co.

Manganese.
Roessler & Hasslacher Chemical Co.

Mortar Colors.
Williams & Co., C. K.

Molds.
American Clay Machy. Co.
Baird Machine & Mfg. Co.
Bonnot Co.
Manufacturers Equipment Co.
Wellington Machine Co.

Mold Sanders.
American Clay Machy. Co.
Bonnot Co.
International Clay Mchy. Co.
Manufacturers Equipment Co.

Motors—Electric.
General Electric Co.
Lincoln Electric Co.
Westinghouse El. & Mfg. Co.

Motor Trucks.
Duplex Truck Co.
Federal Motor Truck Co.
Kissel Motor Car Co.
Service Motor Truck Co.

Oil Burners.
Weller Mfg. Co.

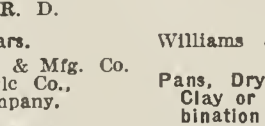
Packing.
Goodyear Tire & Rubber Co.

Paints.
Williams & Co., C. K.

Pans, Dry Pans, Wet Pans, Clay or Chaser Mills Combination Tempering Pans.
American Clay Machy. Co.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Jackson & Church.
Manufacturers Equipment Co.
Stevenson Company.

Pallets and Trays.
Lakewood Engineering Co.
Ohio Galvanizing & Mfg. Co.

Patents.
Peck, Hubert E.



Perforated Sheet Metal.
Brewer & Co., H.
Hendrick Mfg. Co.

Portable Track.
Lakewood Eng. Co.
Manufacturers Equipment Co.
Orenetein-Arthur Koppel Co.

Potters' Machinery.
Bonnot Co.
Baird Machine & Mfg. Co.
Fate Co., J. D.
International Clay Mchy. Co.

Powder.
Du Pont Powder Co.
Hercules Powder Co.

Power Plant Equipment (Complete).
American Clay Machy. Co.
Ball Engine Co.
Bonnot Co.
Jackson & Church Co.
Link-Belt Company.
Trautwein Dryer & Eng. Co.
Weller Mfg. Co.

Power Transmission.
Baird Machine & Mfg. Co.
Link-Belt Company.
Morse Chain Co.

Pug Mills.
American Clay Machy. Co.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Machy. Co.
Manufacturers Equipment Co.
Potts & Co., C. A.
Steele & Sons, J. C.
Wallace Mfg. Co.

Pulverizers.
(See Crushers).

Pulleys.
Cork Insert Company.

Pyrometers,
Beighlee Instrument Co.
Bristol Co.
Brown Instrument Co.
Engelhard, Chas.
Price Electric Co.
Thwing Instrument Co.
Trautwein Dryer & Eng. Co.

Rails (Frogs and Switches).
Chase Fdry. & Mfg. Co.
Lakewood Engineering Co.
Orenstein-Arthur Koppel Co.

Rattler.
American Clay Machy. Co.
Bonnot Co.
Freese & Co., E. M.
Manufacturers Equipment Co.

Recording Gages.
Brown Instrument Co.
Price Electric Co.

Represses.
American Clay Machy. Co.
Bonnot Co.
Chambers Bros. Co.
Freese & Co., E. M.
International Clay Mchy. Co.
Lakewood Engineering Co.
Steele & Sons, J. C.

Rope Preservative.
Cling-Surface Co.

Roofing Tile Machinery.
American Clay Machy. Co.
Bonnot Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.

Rope (Wire and Manila).
Broderick & Bascom Rope Co.
Manufacturers Equipment Co.

Rubber Goods.
Goodyear Tire & Rubber Co.

Sand Lime Brick Machinery.
American Clay Machy. Co.
Jackson & Church Co.
Lakewood Engineering Co.
Manufacturers Equipment Co.

Scrapers, Plows and Clay Gatherers.
Eagle Iron Wks. Co.
Sauerman Bros.
Schofield-Burkett Cons. Co.

Screens (Clay and Cement).
American Clay Machy. Co.
Bonnot Co.
Brewer & Co., H.
Chase Fdry. & Mfg. Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
Hendrick Mfg. Co.
International Clay Mchy. Co.
Lakewood Engineering Co.
Link-Belt Company.
Schofield-Burkett Cons. Co.
Weller Mfg. Co.

Sewer Pipe Machinery.
American Clay Machy. Co.
Bonnot Co.
Brewer & Co., H.
Manufacturers Equipment Co.
Stevenson Company.

Shovels (Power).
American Clay Machy. Co.
Ball Engine Co.
Keyatone Driller Co.
Link-Belt Company.
Marion Steam Shovel Co.
Thew Automatic Shovel Co.
Osgood Co.

Silent Chain Drives.
Link-Belt Company.
Morse Chain Co.

Soft Mud Brick Machines.
American Clay Machy. Co.
Bonnot Co.
Chambers Bros. Co.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Potts & Co., C. & A.
Wallace Mfg. Co.
Wellington Machine Co.

Stiff Mud Brick Machines.
American Clay Machy. Co.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Machy. Co.
Steele & Sons, J. C.
Wallace Mfg. Co.

Steel Pallets.
Lakewood Eng. Co.
Ohio Galvanizing & Mfg. Co.

Supplies.
American Clay Machy. Co.
Bonnot Co.
Chambers Bros. Co.
Freese & Co., E. M.
International Clay Mchy. Co.
Lakewood Engineering Co.
Manufacturers Equipment Co.
Steele & Sons, J. C.
Wallace Mfg. Co.
Weller Mfg. Co.

Thermometers.
Beighlee Electric Co.
Bristol Co.
Brown Inetrument Co.
Engelhard, Chas.
Price Electric Co.
Manufacturers Equipment Co.
Taylor Instrum't Companies.
Thwing Instrument Co.

Tile Machinery.
American Clay Machy. Co.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Steele & Sons, J. C.
Wallace Mfg. Co.

Tires.
Goodyear Tire & Rubber Co.

Trucks.
Duplex Truck Co.
Federal Motor Truck Co.
Kissel Motor Car Co.
Service Motor Truck Co.

Tubing.
Goodyear Tire & Rubber Co.

Turntables.
International Clay Mchy. Co.
Orenstein-Arthur Koppel Co.
Lakewood Eng. Co.

Valves.
Goodyear Tire & Rubber Co.
Homestead Valve Mfg. Co.

Watchman's Clocks.
Hardinge Bros., Inc.

Wire Rope.
Broderick & Bascom Rope Co.
Manufacturers Equipment Co.

Treat Your Boilers Once a Month with **ILLINOIS BOILER CLEANING COMPOUND** to Remove and Prevent Boiler Scale

Write for Trial Case

Illinois Boiler Cleaning Compound Company
127 North Dearborn Street, Chicago, Illinois

Frank E. Webner
CERTIFIED PUBLIC ACCOUNTANT
Factory Cost Specialist
Consultation by Appointment Only
Address: Care of Brick and Clay Record

The "HOVALCO" Blow-Off Valve
is regrinding and renewable. All parts replaced with ease. It is unconditionally guaranteed for this work.
Homestead Valve Mfg. Co.
Homestead, Pa.

"NUGGET"
Best Brick Yard Babbitt
EFFICIENCY GUARANTEED
$20.00 per cwt. delivered
THE CLEVELAND ALLOYS CO. CLEVELAND, OHIO

The Garnet Process Belt Treating Products for
BRICK AND CLAY PLANTS
And GET A FREE SAMPLE see for yourself the superior working quality. There is no other dressing that equals the results.
Advise your requirements and kind of belting used, in letter today to
The Garnet Company, Allentown, Pa., U.S.A.

BABBITT METAL
FITS YOUR LADLES
For The Summer Repairs.
"NUGGET"
THE CLEVELAND ALLOYS CO., Cleveland, O.

If You Believe Efficiency is a Factor
in the cost of production, there is no place it will show more than in the life and service of your kilns.

When building new kilns or preparing old ones, why not use material that will give best service, reduce repair bills, extend the life of your kilns, enlarge opportunities for increased output and swell profits?

We make a specialty of high grade fire brick for kiln construction, and special shapes for fire boxes, arches, flues and bottoms.

Consult us before buying.

Ten plants located on the Pennsylvania, New York Central and B. & O. railroads.

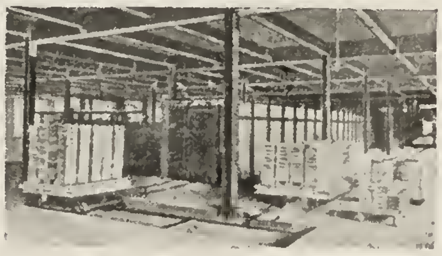
Jos. Soisson Fire Brick Company
General and *Sales Offices:* Connellsville, Pa.

Fire Brick for all types of kilns. For burning all kinds Clay Products.
For Side Walls
For Crowns
For Fire Arches
For Perforated Bottoms
Consult us when in market. We are ready to serve you.
Davis Fire Brick Co., Oak Hill, Ohio

We Can Save You Time, Money and Trouble on Fire Brick
BECAUSE OF
Quality, Price and Service
Freight Rates on all R.R.'s in UNITED STATES and CANADA
A Trial Shipment Will Convince You
Write Us
Alsey Brick & Tile Company, Alsey, Ill.

FIRE BRICK
DOVER FIRE BRICK CO.
Incorporated 1870
— MANUFACTURERS OF —
Dover and Buckeye Fire Brick
Unexcelled for kiln purposes
509 CUYAHOGA BLDG. CLEVELAND, OHIO

The J. B. Owens Continuous Tunnel Kiln Is Superior
For It Approximately
Saves 75% in Fuel. 50% in Labor. 75% in Saggers.
Write today for the Illustrated Descriptive Booklet
The J. B. Owens Continuous Tunnel Kiln Co.
METUCHEN, N. J. New York Office, 137-139 West 25th St.



The Alliance Clay Product Co.
Manufacturers of the Famous
Speedway Block
Dunn Wire-Cut-Lug-Brick
Also High-Grade Building and Face Brick
ALLIANCE, OHIO
NATIONAL PAVING BRICK MANUFACTURERS ASSN. NPBMA Pave with Brick

Best Paving Brick Made

Daily Capacity 1,000,000 Brick

The Metropolitan Paving Brick Co.
Canton, Ohio

SHAWMUT VITRIFIED PAVING BRICK WORKS
SHAWMUT, PA. Alfred Yates Gen. Mgr.
Vitrified Shale and Fire Clay Paving Bricks and Blocks
BURNED IN YATES' PATENT KILN
SAMPLES AND PRICES ON APPLICATION

PURINGTON PAVERS
ARE MADE OF
GALESBURG SHALE
The Purington Paving Brick Co.
Galesburg, Illinois

WHEN in need of "help" refer to our "Position Wanted" column. If what you want is not advertised there, instruct "Brick and Clay Record" to insert a suitable ad for you. Quick results.

Quality, Service and Price
Three points in favor of the Fire Brick manufactured by the
Cannelton Clay Products Co., of Cannelton, Ind.
Give them a trial. Write today.

Thomas Moulding Brick Co.
High-Grade Fire-Brick and
Special-Fire-Clay-Shapes
Press-Brick Enamel-Brick
Building-Specialties
CHAMBER-OF-COMMERCE BLDG-CHICAGO

A. P. GREEN FIRE BRICK CO.
Plants and General Office: MEXICO, MO.
District Sales Offices: CHICAGO TULSA HOUSTON
HIGH GRADE MEXICO FIRE BRICK TRADE MARK
Manufacturers of
MEXICO
High Grade Fire Brick
and special shapes of all designs for Kilns and Boilers

FIRE BRICK
Standard 9 inch Size Nos. 1 and 2 Arches, No. 1 Splits and Soaps
PROMPT SHIPMENT
Cameron Clay Products Company
Cameron, Pa.

The Danville Brick Company
Manufacturers of
The Unsurpassed Danville Paving Block
DANVILLE, ILL.
Let Us Quote You Prices
NATIONAL PAVING BRICK MANUFACTURERS ASSN. NPBMA Pave with Brick

Sterling Brick Company
OLEAN, N. Y.
Manufacturers
OLEAN BLOCK WIRE-CUT-LUG
Made from shale
VITRIFIED
Many are not as good
A few may be as good,
None Are Better

The Medal Paving Brick Co.
Formerly
The Deckman-Duty Brick Company
Manufacturers of
MEDAL BLOCK
Repressed and Wire-Cut-Lug
CLEVELAND, OHIO

NATIONAL PAVING BRICK MANUFACTURERS ASS'N
NPBMA
Pave with Brick

Barr Paving Blocks
Repressed and Wire-Cut-Lug
Colonial Face Brick and Blocks
Barrtexture Face Brick
THE BARR CLAY CO.
STREATOR, ILL.

NATIONAL PAVING BRICK MANUFACTURERS ASS'N
NPBMA
Pave with Brick

Murphysboro Paving Brick Co.
Manufacturers of
The Celebrated Egyptian Paving Block
The Block That Stands the Test
Prices and samples furnished upon application
MURPHYSBORO, - - - ILLINOIS
ALSO DUNN WIRE-CUT-LUG BRICK

Ironstone Block
"Often Rattled but Never Embarrassed"
Repressed and Dunn Wire-Cut-Lug
Terre Haute Vitrified Brick Co.
TERRE HAUTE, INDIANA

American Clay & Cement Corporation ROCHESTER, N. Y.
Manufacturers of Clay Products
Distributors Face and Ornamental Brick-Masons' Supplies—All Indestructible Building Material

Hocking Valley Brick Co.
Manufacturers of
Hocking Paving Brick
Repressed and Wire-Cut-Lugs, Dunn Patent
Plants: Logan, O. *General Offices:* Columbus, O.
Output 15,000,000 Annually

ALLIANCE MULTI-COLOR BRICK

Excel all other brick as to texture and beauty of coloring. The chromatic scale of colors runs through the beautiful Rough-texture faces of these brick, most of the brick showing three or four or more of the seven primary colors. One of the most popular sellers in America today.

Mr. Agent, this brick will get you business. Write for samples.

The Alliance Brick Co., Alliance, Ohio

L. D. BINYON, President H. L. MATZ, Vice-President JAS. A. HOGAN, Sec'y and Treas.
S. S. Kimbell Brick Co.
Facing Brick, Mortar Colors, Raggle Blocks
Main Exhibit and General Offices: 304-306 Chamber of Commerce
Branch Exhibit and Sales Room: 738 South Michigan Boulevard
CHICAGO

Hy-tex
The Standard of Quality in Brick
Every texture and color of brick may be found in the Hy-tex line. Send for information to the nearest Branch.
BRANCH OFFICES AND EXHIBIT ROOMS
Baltimore; Chicago; Cleveland; Roseville, O.; Davenport; Dubois, Pa.; Indianapolis; Kansas City; Minneapolis; New York City; Omaha; Philadelphia; Toledo; Washington, D. C.
HYDRAULIC-PRESS BRICK COMPANY
ST. LOUIS

ATHENA SALT GLAZED BRICK
In Beautiful Rich Shades of Mahogany, Brown, Golden and Buff (Size 8¼"x4"x2¼") — Are used wherever sanitary conditions, permanency and beauty are desired.
Annual Capacity — FIFTEEN MILLIONS
SALT GLAZED FLOOR BRICK
Everwear Paving Tile — (Size 10"x5"x2¼")
Sanitary Floor Brick — (Size 8¼"x4"x1⅝")
Offers Great Possibilities for the Dealer
THE HOCKING VALLEY FIRE CLAY COMPANY, NELSONVILLE, OHIO

"NAVAJO" "BROCADE" BRICK
The Kansas Buff Brick & Mfg. Co.
Buffville, Kansas
SALES OFFICES IN ALL PRINCIPAL CITIES

The East Ohio Sewer Pipe Co.
Largest Independent Manufacturers of
Sewer Pipe, Flue Lining, Wall Coping, etc., in the United States
IRONDALE - - - - OHIO

Trade Names Now in Use

on Face Brick and Other Clay Products

The purpose of this directory is twofold; it serves to prevent a manufacturer from adopting a trade-name that is already in use—and it also helps manufacturers who use it to establish priority of claim to a name.

Algonquin—Alliance (O.) Brick Co.

Armor—Greenpoint Fire Brick Co., Brooklyn, N. Y.

Artistico—Capital Clay Co., Des Moines, Ia.

Artorique—Yingling-Martin Brick Co., Johnsonburg, Pa.

Athena—Hocking Valley Fire Clay Co., Nelsonville, Ohio.

Beaverclay—Beaver Clay Mfg. Co., New Galilee, Pa.

Belden—The Belden Brick Co., Canton, O.

Bessemer Block—Metropolitan Paving Brick Co., Canton, O.

Bokhara (Hy-tex)—Hydraulic-Press. Bk. Co., St. Louis.

Burlap—Key-James Brick Co., P. O. Alton Park, Tenn.

Caledonian—Fiske & Co., Inc., Boston and New York.

Century Block—Metropolitan Paving Brick Co., Canton, O.

Chaldean (Hy-tex)—Hydraulic - Press. Brick Co., St. Louis and Chicago.

Chinchilla (Hy-tex)—Hydraulic-Press Bk. Co., Indianapolis.

Citadel—Citadel Brick & Paving Block Co., Ltd., Quebec.

Claytex—Walton N. Cable, New York City.

Clayton Missions—Washington Brick, Lime & Sewer Pipe Co., Portland, Ore.

Clayton Velvets—Washington Brick, Lime & Sewer Pipe Co., Portland, Ore.

Cloister—Western Brick Co., Danville, Ill.

Colonial—Capital Clay Co., Des Moines, Ia.

Colonial Reds—Belden Brick Co., Canton, O.

Columclay—Columbia Clay Co., Columbia, S. C.

Cordova (Roofing Tile)—Gladding, McBean & Co., San Francisco and Lincoln, Cal.

Corsweve—Thomas Moulding Brick Co., Chicago, Ill.

Crown—Green Fire Brick Co., A. P., Mexico, Mo.

Denison—Mason City (Ia.) Brick & Tile Co.

Doric—Western Brick Co., Danville, Ill.

Egyptian Paving Block—Murphysboro (Ill.) Paving Brick Co.

Embostex—Streator (Ill.) Brick Co.

Empire—Green Fire Brick Co., A. P., Mexico Mo.

Empire—Western Brick Co., Danville, Ill.

Everhard Antique—Everhard Co., Massillon O.

Everhard Double-texture—Everhard Co., Massillon, O.

Everhard Fern-leaf—Everhard Co., Massillon. Ohio.

Everlasting—Mason City (Ia.) Brick & Tile Co

Fallston Iron Spots—Fallston Fire Clay Co.. Pittsburgh, Pa.

Fallston Weavetex—Fallston Fire Clay Co., Pittsburgh, Pa.

Fisklock—Fiske & Co., Inc., Boston and New York.

Ful-tone—Fultonham-Texture Brick Co., East Fultonham, Ohio.

Fultonham-Texture—Fultonham-Texture Brick Co., East Fultonham, Ohio.

Gothic—Western Brick Co., Danville, Ill.

Greendales—Hocking Valley Pro. Co., Columbus, O.

Greendale Red Rugs—Hocking Valley Pro. Co., Columbus, O.

Greendale Rugs—Hocking Valley Pro. Co., Columbus, O.

Grid—Fiske & Co., Inc., Boston and New York.

Hawk-I-Tex—Capital Clay Co., Des Moines, Ia.

Hi-Grade — Southwest Building Supply Co., Springfield, Mo.

Hocking Block—Hocking Valley Brick Co., Columbus, O.

Holland Split—Thomas Moulding Brick Co., Chicago, Ill.

Homespun—Thomas Moulding Brick Co., Chicago, Ill.

Homestead—Farr Brick Co., Cleveland, O.

Hood's Pottry—B. Mifflin Hood Brick Co., Atlanta, Ga.

Hy-namel—Hydraulic-Press. Brick Company, St. Louis, Mo.

Hy-tex—Hydraulic-Press. Bk. Co., St. Louis, Mo.

Interlocking Tile—Denison Interlocking Tile Corporation, Cleveland, Ohio.

Ironclay—Iron Clay Brick Co., Columbus, O.

Ironstone Block—Terre Haute (Ind.) Vit. Bk. Co.

Loxall—Exner, J. E., Coffeyville, Kan.

McArthur Mission Brick—McArthur Brick Co., McArthur, O.

McArthur Rug Brick—McArthur Brick Co., Massillon, O.

Medal Block—Medal Paving Brick Co., Cleveland, Ohio.

Mexico, Mo.—Green Fire Brick Co., A. P., Mexico, Mo.

Metropolitan Block—Metropolitan Pav. Brick Co., Canton, O.

Montezuma Red Face—Montezuma (Ind.) Brick Works.

Mosaic—Western Brick Co., Danville, Pa.

Muskogee Rug—Muskogee (Okla.) Vitrified Brick Co.

Navajo—Kansas Buff Brick & Mfg. Co., Buffville, Kan.

Nuvogue—Boone (Ia.) Brick, Tile & Pav. Co.

Old Rose Colonial—Montezuma (Ind.) Brick Works.

Olean Block—Sterling Brick Co., Olean, N. Y.

Persian Split—Thomas Moulding Brick Co., Chicago, Ill

Porter National—Globe Brick Co., East Liverpool, O.

Poston Knobstone Block—Martinsville (Ind.) Brick Co.

Promenade—Yingling-Martin Brick Co., Johnsonburg, Pa.

Purington Pavers—Purington Pav. Brick Co., Galesburg, Ill.

Red Rock Ruffs—Auburn Shale Brick Co., Gettysburg, Pa.

Reynoldsville—The Reynoldsville (Pa.) Brick & Tile Co.

Rocktex—Citadel Brick & Paving Block Co., Ltd., Quebec.

Ruftex—Thomas Moulding Brick Co., Chicago.

Rug—Hocking Valley Pro. Co., Columbus, O.

Rugosa—Wisconsin Lime & Cement Co., Chicago, Ill.

Rustico (Hy-tex)—Hydraulic-Press. Bk. Co., Davenport, Ia.

Rustique Oriental—Martinsville (Ind.) Bk. Co.

Saraband (Hy-tex)—Hydraulic - Press Bk. Co., St. Louis, Mo.

Shale-Tex—Streator (Ill.) Brick Co.

Sheffield—Sheffield Brick & Tile Co. and Sheffield Tile Co., Sheffield, Iowa.

Shirvan (Hy-tex)—Hydraulic-Press. Bk. Co., Cleveland, O.

Shor-Tex—The D. C. Shorey Brick Co., Cincinnati, Ohio.

Special—Green Fire Brick Co., A. P., Mexico. Mo.

Speedway Block—Alliance (O.) Clay Prod. Co

Standard—Green Fire Brick Co., A. P., Mexico, Mo.

Stranger Reds—The Reynoldsville (Pa.) Brick & Tile Co.

Star Fire Brick—Star Clay Products Co., San Antonio, Tex.

Star Fire Proof Hollow Building Tile—Star Clay Products Co., San Antonio, Tex.

Sun-Tex—Sun Brick Co., Ltd., Toronto, Ont

Sykesville—The Reynoldsville (Pa.) Brick & Tile Co.

Tapestry—Fiske & Co., Inc., Boston and New York.

Tavern Brick—Metropolitan Pav. Brick Co., Canton, O.

Telco—Terra Cotta Lumber Co., P. O. Emmaton, Cal.

Tex-Tile—Clymer (Pa.) Brick & Fire Clay Co.

Textur—Thomas Moulding Brick Co., Chicago, Ill.

Tiffany—Thomas Moulding Brick Co., Chicago.

Tiger Shale—Belden Brick Co., Canton, O.

Toronto—Toronto Fire Clay Co., Toronto, O

Turkestan—Beaver Clay Mfg. Co., New Galilee, Pa.

Turko—Rochester (Pa.) Clay Products Co.

U-Tex—Fultonham-Texture Brick Co., East Fultonham, Ohio.

Velour (Hy-tex)—Hydraulic-Press. Brick Co., St. Louis and Chicago.

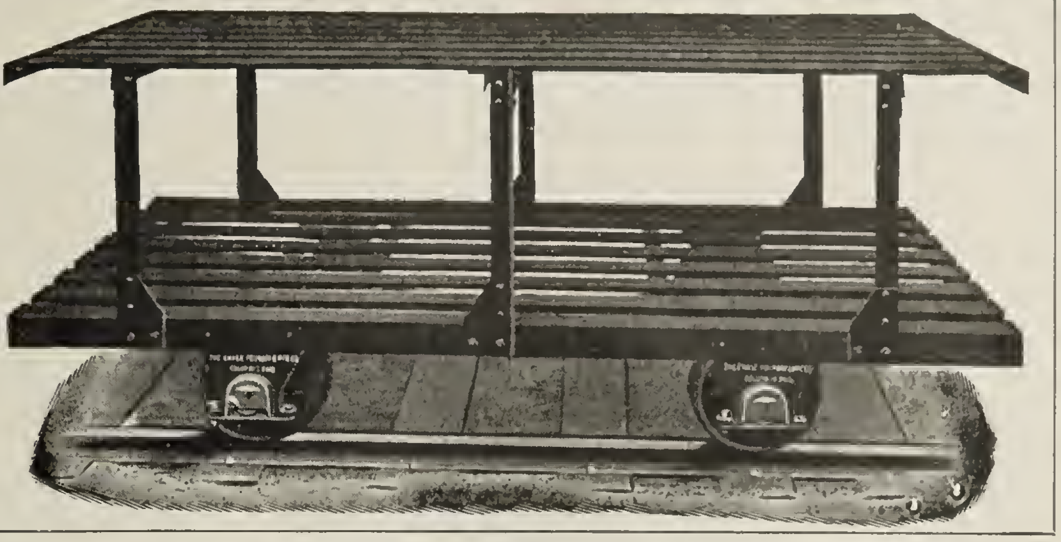
Vertex—Beaver Clay Mfg. Co., New Galilee, Pa.

Vitri-Craft—Schuylkill Valley Vitrified Products Co., Oaks, Montgomery Co., Pa.

Volcanic—Beaver Clay Mfg. Co., New Galilee, Pa.

West Salem Matts—West Salem (Ill.) Hollow Brick & Tile Co.

Wire-Cut Lug Brick—Dunn Wire-Cut Lug Brick Co., Conneaut, Ohio.



THE CHASE DRYER CARS

With patented flexible and reversible boxing and roller bearings

The *Best Equipment* is the Equipment that gives you the *Best Service*

The Chase Fdry. & Mfg. Company
Columbus, Ohio

We will be glad to send samples

Perforated Metal Screens
for
Clay - Cement - Gravel
Stone, etc.

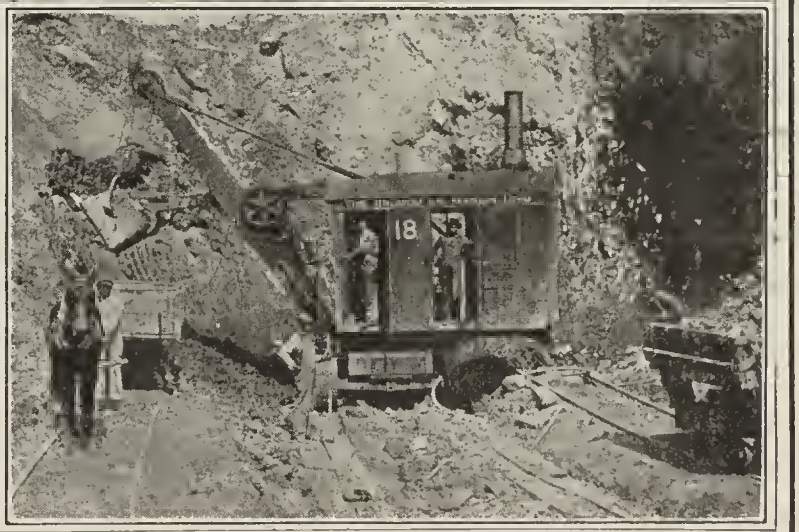
Prompt Shipments

HENDRICK MFG. CO.,
Carbondale, Pa.

You will do better with an OSGOOD

The OSGOOD "18," ¾ yard Traction Revolving Shovel will mix the different stratas of your supply material with every lift of the dipper. It will enable you to get the material quicker, better and at much less expense.
We shall be pleased to give full description and detail information upon application.

THE OSGOOD COMPANY, MARION, OHIO



BELTING

"V-B" (Victor-Balata)
"Ampere"—"White Seal"
(Canvas Stitched)

Write for Prices, Discounts and Samples

VICTOR BALATA & TEXTILE BELTING CO.

Main Office: 38 Murray St., New York Factory: Easton, Pa.
Stores: 167 N. Market St., CHICAGO 87 High Street, BOSTON

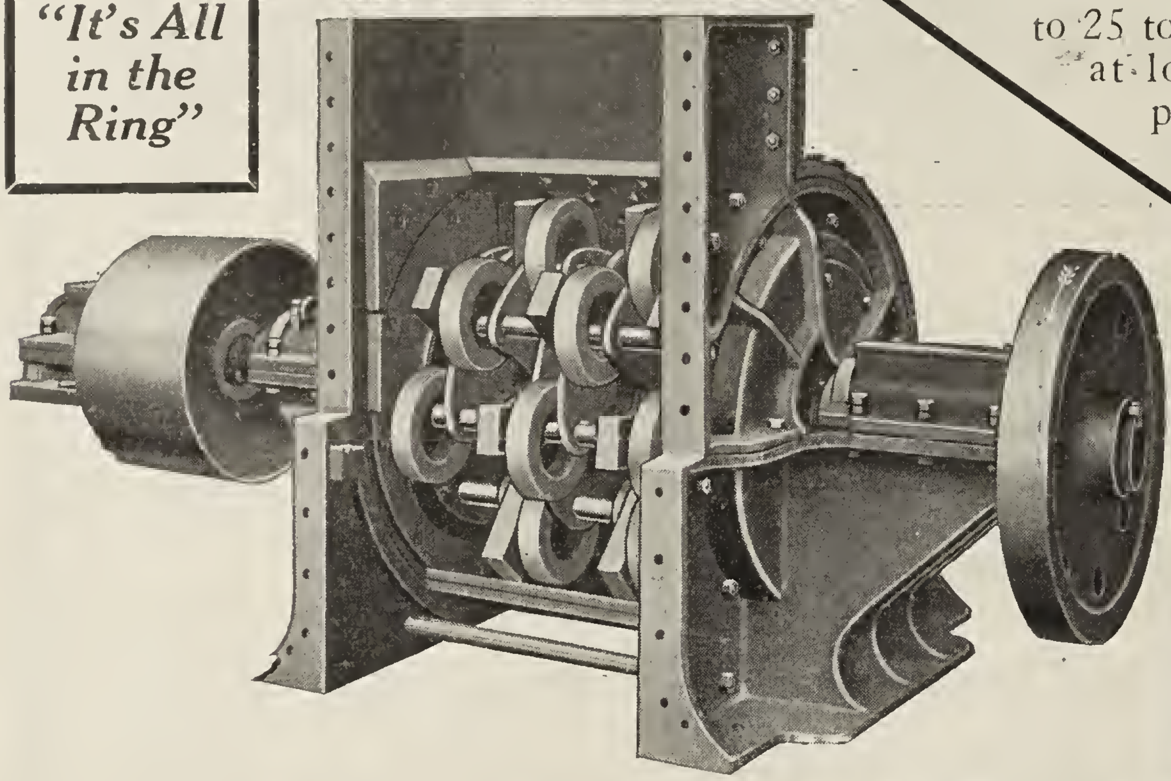
CONVEYOR BELTS A SPECIALTY

The American Ring Pulverizer

In the Winter Time as Well as In the Summer

There are no seasons when it isn't good. It does the best work when conditions are difficult. Hard shale, impregnated with rock, and clay frozen "hard as rock," are crushed easily. It will pulverize from 18 to 25 tons of clay and shale each hour, at low speed and consequently low power and repair cost.

"It's All in the Ring"



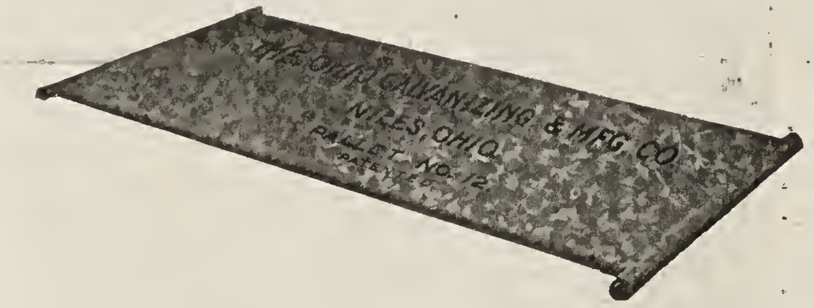
Tell us your output, and just what you want to do, send us a sample and we will honestly tell you what we can do and guarantee results.

American Pulverizer Co.

St. Louis, Mo.

18th and Austin Streets

Style No. 12


THE OHIO GALVANIZING & MFG. CO.
NILES, OHIO
PALLET NO-12

A Time and Money Saver

We make a Steel Pallet that is just exactly what your class of work requires

Our line of manufacture covers the entire Steel Pallet field.

No matter what pattern you need. If you require something quite out of the ordinary, so much the better. We can make it right, deliver it promptly and for the least price. Because we are specialists in this particular line.

Simply let us know what you need or send for complete descriptive matter.

The Ohio Galvanizing & Mfg. Co.

Niles, Ohio

Rusting away—to a state of uselessness

The machine you discarded for one of larger capacity is still in good condition, lots of wear in it. Are you allowing it to rust out?

Offer it for sale—somebody will be glad to get it, and it will mean that the net cost of your new equipment will be that much less. Good business judgment, isn't it?

Eight cents per word for one insertion, Six cents per word for each additional insertion, in the Classified Department.

BRICK AND CLAY RECORD, 610 Federal Street, CHICAGO, ILL.

THE LABOR SAVING MATHEWS GRAVITY CARRIER

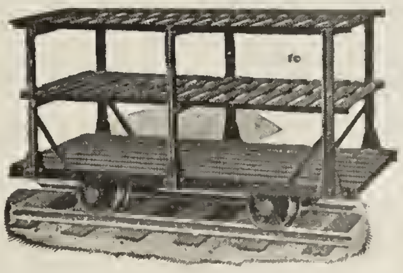
Without any expenditure of labor—of man-power—it **carries** brick, hollow block, drain tile . . . where formerly it was necessary to pile all ware on wheelbarrows, push it to pile and then unload. This is all accomplished now by curves and straight lengths of the carrier, saving time and men, and doing the work better at less cost. These are facts.

The Mathews Gravity Carrier Co.
Elwood City, Pa.
Branch Factories: Toronto, Ontario; and London, England

What Are You Going to Give Your Business For

Christmas?

Should you give it something? Certainly, it's been good to you. Return it if you expect more. And if you are in doubt as to what to give, may we suggest cars?

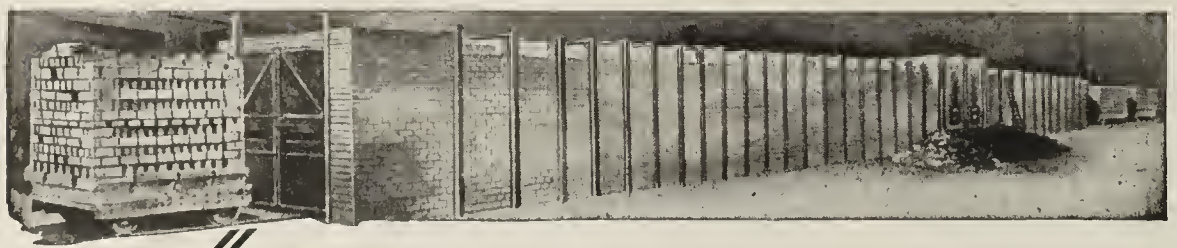


Our plant is the largest in the world devoted to the manufacture of cars. Our great facilities are at your disposal, and we will be pleased to suggest a proper car for you.

Write today for our catalogues

The Watt Mining Car Wheel Co.
Barnesville, Ohio, U. S. A.

The Best Type of Kiln is Continuous. The Didier-March Railroad Tunnel Type is the Best of the Continuous Kilns



Of course there is a reason, a big one, which may be defined in a few words—the heat is stationary always; only the cars of ware move. That's the reason the kiln is so economical; it burns a ridiculously small amount of coal, and one fireman to each shift is sufficient.

Inasmuch as the heat zone does not move but is always stationary, it is obvious that an enormous mass of brick work is not being gradually heated to a white heat and cooled, as is the case with the periodical kiln or other continuous kilns, where new chambers are alternately heating and cooling. There are other features that are just as remarkable. Write us.

The Didier-March Co. Perth Amboy, N. J.

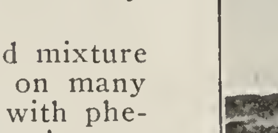
Digs Anywhere
Dumps Anywhere

If the clay is at a considerable distance from the plant, the Schofield-Burkett Excavator is set up at the pit, loading the clay into cars or wagons.

Sometimes it is the good fortune of the plant to have the clay near to the factory, then it is feasible to dig and dump the clay at the plant.

The system is flexible, it gets a good mixture of clay, it is cheap to operate. Used on many clay plants all over the United States with phenomenal success. Let us figure with you!

The Schofield-Burkett Construction Company
Macon, Georgia

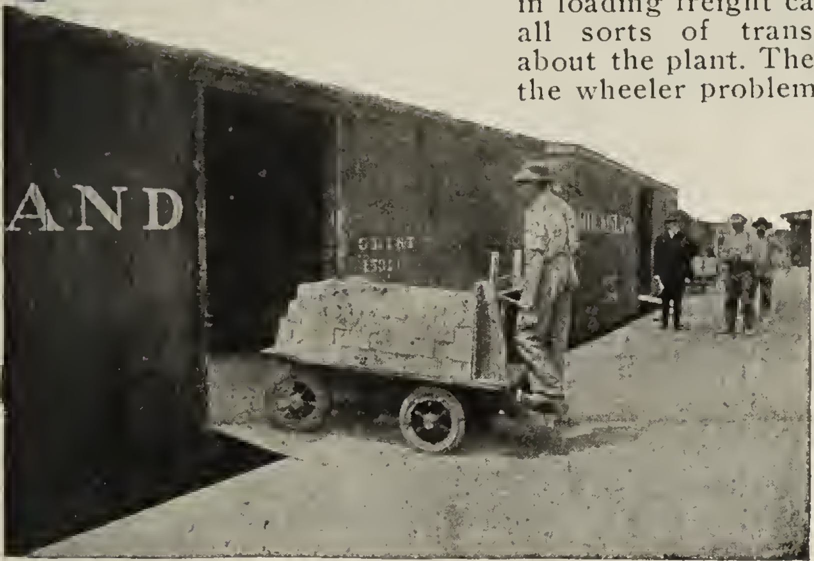


KOPPEL

Can Save You Time — Labor — Expense With

ELECTROMOBILE
TRADE MARK
INDUSTRIAL TRUCK

The Electromobile Industrial Truck—Electrically driven, Trucks, Tractors, Trailers; use them in emptying kilns, in loading freight cars and in all sorts of transportation about the plant. They'll solve the wheeler problem for you.



The Electromobile in service Loading Freight Cars.

Can Supply You Promptly With Practical, Up-To-Date, Reliable

Dryer and Transfer Cars to haul the brick from cutting machine or press to kiln—Dump cars to transport the shale to the shale room—Portable track for the shale bed—Steel Ties, Rails, Frogs and Switches, Cast Plate Track and Turntables for the permanent railway—In fact, wherever there's hauling to be done, suitable Koppel equipment is ready.

Write for catalogs and prices. Let us help you to solve your transportation problems.

ORENSTEIN-ARTHUR KOPPEL CO.

PLANT: KOPPEL, PA.

SALES OFFICES:
New York Pittsburgh Chicago
Pacific Coast Representative—Koppel Sales Co., Inc., San Francisco.
Branches all over the world.

Save Coal

America at war demands that every possible pound of coal be saved; every drop of oil do maximum service, and every possible unit of man-power be conserved.

QUAKER CITY RUBBER BELTING

You can save coal by using QUAKER CITY Belt, because there is no tractive loss; you can save oil, because none will be wasted on bearings carrying shafting running idle due to belt slippage; you can save man power because there will be no belt repairs to make.

Tell us about your conditions when you write for a sample of QUAKER CITY Belting.

Tractive power—pull—the property upon which efficiency depends; and tensile strength—the quality that backs up tractive power—are finely balanced in QUAKER CITY Belting.

This sturdy, long-lasting belting can be relied upon to deliver every unit of power, to prevent shut-downs and to prove economical in the highest degree.

Quaker City Rubber Company

PHILADELPHIA
629 Market St.

CHICAGO
182 W. Lake St.

PITTSBURGH
211 Wood St.

NEW YORK
53 Murray Street

THEW Breaking Banks for Bricks

"We always wait for cars" is what John Gruber says of the Thew Type O shovel he operates for the Deckman-Duty Brick Co. of Cleveland, Ohio.

Thew shovels are always popular with clay workers because of the exclusive features the Thew possesses. Its ability to give a wide range of action, particularly dumping height and dumping radius. Its strong dipper and dipper teeth that crush through any shale. Its swivel dipper arm that makes digging easy.

Built in six sizes and sixty combinations to accommodate any character of work. Thew evidence from a Thew owner near you in the clay industry on request.

"Thews Are Everywhere"

The Thew Automatic Shovel Company

Lorain, Ohio

Sales outside of the United States and Canada handled through the ALLIED CONSTRUCTION MACHINERY CORPORATION, NewYork,U.S.A.

New York Office:
30 Church Street

TRADE SAWYER MARK Registered Stitched Canvas Belting

The Reasons For Its Continued Popularity are painstaking selection and preparation, skillful fabrication, and careful inspection—of every single roll.

In the following points, excellence is maintained:

Folding, straight and even folding by machine insures true running on pulleys.

Stitching, in close parallel rows, one quarter inch apart.

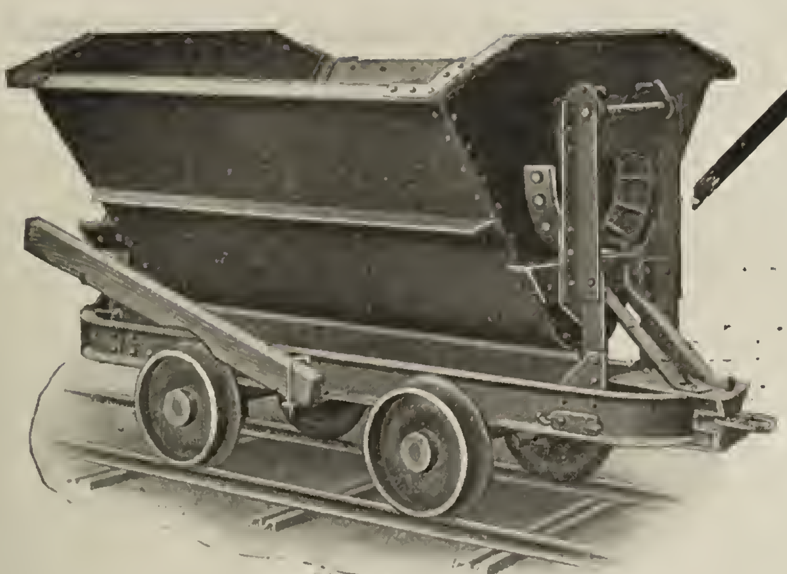
Waterproofing, extreme care is used in selecting the best waterproofing oils.

Painting, the famous Sawyer Red Elastic Belt paint is used.

Calendering, the belt is rolled down smooth and even with heavy rolls.

Stretching, efficiently done at factory, no stretch on your pulleys.

The Sawyer Belting Co., Cleveland, O.



Move Your Loads

in Lakewoods—the logical way and the most efficient and economical way. Their installation results at once in improved conditions. It not only solves the handling problems of your yards, but at once relieves your transportation congestions.

The "Lakewood" No. 241 "V" Dump illustrated above is made in 18 cu. ft., 1-yard and 1½-yard capacities. Can be locked so as to dump on one side only if desired. Any gauge of track may be provided for. It is furnished with plain or spring draw and solid, adjustable or spring bearings as desired. Correct in design, built to last, ready for real service and prompt delivery.

There is a car or cars in the "Lakewood Line" that will solve your problems, ask us about them.

The "Lakewood" Line

includes *Dryer Cars, Dump Cars, Mud Cars, Clay Cars, Rack Cars, Brick Presses, Portable Track, Transfer Cars,* besides complete Industrial and Construction Equipment.

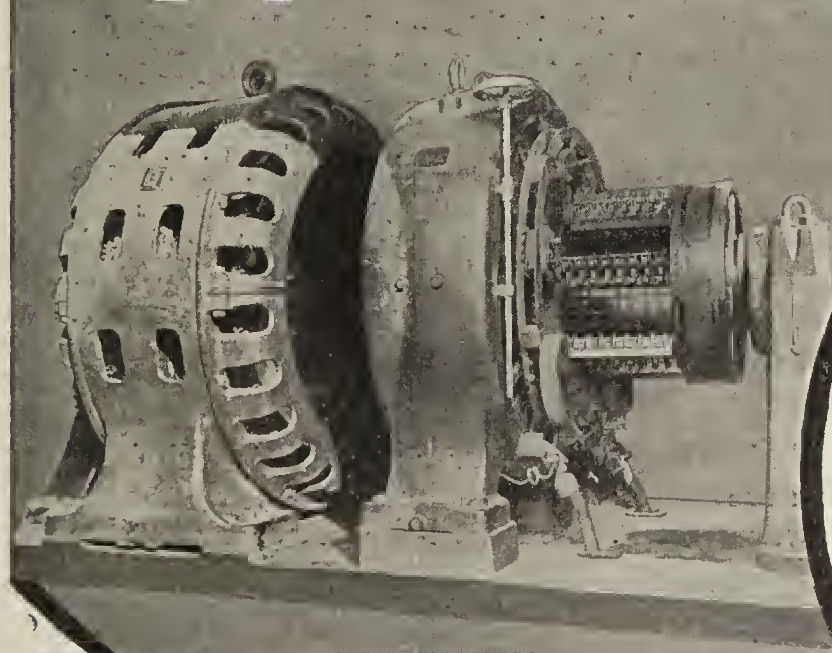
Link up with Lakewood

LAKEWOOD BUILT TO LAST

Lakewood Engineering Co. Cleveland

Sales outside of the United States and Canada handled through the ALLIED CONSTRUCTION MACHINERY CORPORATION, New York, U.S.A.

Westinghouse



Ask anyone who has installed Westinghouse electric drive what he thinks of it, and he will tell you—

—That it is the cheapest power,
—That it is the most reliable,
—That upkeep is lowest, and
—That motors require very little attention.

These are facts you can get direct from the user.

Let us give you a list of installations in your territory.

Westinghouse Electric and Manufacturing Co.

East Pittsburgh, Pa.

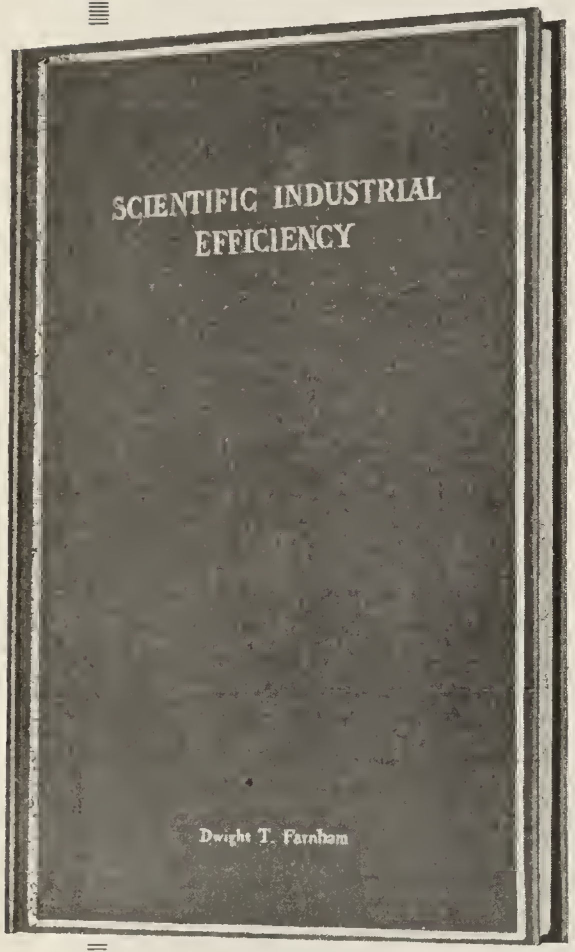
W WESTINGHOUSE ELECTRIC

This book has been written for you!

It deals with the application of SCIENTIFIC MANAGEMENT to

CLAY PRODUCTS PLANTS

—and to clay products plants alone; and it has been written by a man whose unlimited experience and research in the clay products industry qualifies him to speak with authority.



By applying the principles of scientific management, outlined in detail by Dwight T. Farnham, in his new book,

SCIENTIFIC INDUSTRIAL EFFICIENCY

one sewer pipe company, in 18 months, CUT ITS LABOR COST 20 to 30 PER CENT, increased its output 50 per cent, and boosted the quality of its product 20 per cent; a paving brick company cut its labor cost 15 per cent, doubled its output, and reduced its rattler loss from 19 to 16 per cent; another company, manufacturing fire brick, by the application of those principles outlined in this valuable book, cut its production costs 30 per cent, and trebled its output without installing additional equipment.

How these phenomenal results have been accomplished is explained elaborately and in great detail in "Scientific Industrial Efficiency," and it shows how YOU, by applying the same simple principles, may obtain similar startling results in increasing production and cutting costs.

It is by far the best book on clay plant management ever written and it deals thruout with those problems of operation and management which plant owners, managers, and superintendents encounter daily. Tempering, drying, setting and burning receive much attention as well as such important topics as bonus plans, piece and wage systems; charting operations and methods; despatching work; costs and their determination; depreciation; factory and staff organization; intensive labor development; hiring labor, and scheduling deliveries—just a few of them but enough to give a good idea of the scope of the book.

You will find it one of the most practical and valuable books you have ever read, as it will show you how to grapple with the great problems which you are facing today—fuel, labor, decreased production—and solve them by means of scientific management. You need the book; say but the word and we'll forward your copy to you.

THE PRICE IS $2.00
The Worth is Inestimable

BRICK AND CLAY RECORD 610 FEDERAL ST.
CHICAGO, ILL.

Enlist in The Quarrymen's Regiment —The 28th Engineers

A Special Quarrymen's Regiment is being organized—made up of quarry workers. It will do quarry work in France—keeping the front supplied with rock for every need. It is a volunteer regiment.

These are the skilled men who are needed in the Special Quarrymen's Regiment:

- DRILL RUNNERS
- POWDERMEN
- ENGINEERS
- MACHINISTS
- COMPRESSOR RUNNERS
- BLACKSMITHS
- STEAM SHOVEL OPERATORS
- TUNNEL MEN
- SUPERINTENDENTS
- HAND DRILLERS
- TIMBERMEN
- FIREMEN
- ELECTRICIANS
- HOIST RUNNERS
- TOOL SHARPENERS
- TRACKMEN
- LABORERS
- FOREMEN

RATES OF PAY

Will be regular Army pay, which is clear money, for the Army furnishes all food and clothing free. You will be enlisted as a private—every man will be a private when he goes in. Then the best men will be chosen from these ranks to fill the non-commissioned officers' jobs.

There will be six companies in all. Each company contains 250 men—six times the number shown below. Here are the Rates of Pay and the number of SKILLED QUARRYMEN needed in each company. Remember, the best men get the highest paid places:

Each company will be made up as follows:

	In each Company	Monthly pay of each when abroad
First Sergeant	1	$60.00
Sergeant, first class	4	60.00
Supply Sergeant	1	51.20
Mess Sergeant	1	51.20
Stable Sergeant	1	51.20
Sergeant	10	51.60
Corporal	20	51.20
Horseshoer	1	44.00
Saddler	1	40.20
Wagoner	4	40.20

	In each Company	Monthly pay of each when abroad
Cook	5	$44.00
Bugler	2	33.00
Private, first class	66	36.60
Private	132	33.00

The following quarrymen will be chosen for Battalion Headquarters:

Master Engineer, senior grade	2	$96.00
Master Engineer, junior grade	4	84.00
Battalion Sergeant Major	1	60.00
Battalion Supply Sergeant	1	60.00

Quarry Owners and Officials, Your Government Asks You

This advertisement is written for the United States Government. Your Government is asking you QUARRY OWNERS and OFFICIALS to spare a FEW MEN for service abroad. One, two or three men from each quarry in the country would furnish many more than the quota required for this Special Quarry Regiment.

Please Post This Advertisement

Put it on the bulletin board where all the men will see it. Talk to some of your men about it, and advise a few of the skilled men, without dependents, to enlist in this SPECIAL QUARRY REGIMENT.

To Quarrymen Who Want to Enlist in the Special Quarry Regiment—Fill in and mail this form, or one like it, made on a sheet of plain paper.

Fill in This Form, by Typewriter if possible, and Mail Today To

COMMANDING OFFICER, 28th ENGINEERS, Office of Chief of Engineers, War Dept., Washington, D. C.

(1) Name .... (2) Address ....

.... (3) Age .... (4) Nationality ....

(5) Married or single .... (6) Have you been called in the draft? ....

(7) Will you enlist for period of the war? .... (8) State briefly your quarry or other construction experience ....

....

(9) What machinery can you operate? ....

(10) Your present or a former employer must certify to your qualifications by signing here ....

....

SIGNATURE OF EMPLOYER EMPLOYER'S ADDRESS FOR TELEGRAMS

This Space Donated to the Cause by BRICK AND CLAY RECORD

Classified Advertisements

WANTED—HELP

WANTED—Superintendent for Paving Brick Plant. Must have thorough knowledge of the paving brick business and know how to handle colored labor; must have mechanical ability and should know something about burning. Applicant need not answer unless you can meet these requirements, and must be steady, sober and reliable. Answer stating age, where employed salary expected, also references. Apply Moberly Paving Brick Co., Moberly, Missouri. 12-1

WANTED—Experienced man to handle sales and collecting; to supervise office and payroll work, and superintend the making of special moulds for refractories in fire-brick plant. Capacity 12M. State salary required and full details. Those only with reputation and experience requested to answer. Address: 12R, care of "Brick and Clay Record." 12-TF.

WANTED—Foreman for sewer-pipe plant, two press shop. Must be capable of handling a press when necessary. State fully experience, give references and salary expected. Address: 11-Sewer Pipe, care of "Brick and Clay Record."

WANTED—Superintendent for two-press sewer pipe factory located in central Mississippi Valley. State qualifications, experience, age and salary expected and give references. Address: 12-Miss., care of "Brick and Clay Record." 12-1

WANTED—Superintendent for seven-kiln Illinois drain tile factory. Must have shale burning experience. Give references, age, experience and salary expected. Address: 12-Ill., care of "Brick and Clay Record." 12-1

WANTED—A wheeling crew for moving paving blocks from kiln to cars and stock house. Write C. P. Mayer Brick Company, Bridgeville, Fa. 11-2

WANTED—Good reliable man to take entire charge of face-brick and tile plant; one who desires to purchase some stock preferred. Give full particulars and references first letter. Address: 122-E, care of "Brick and Clay Record." 122-1P

HELP WANTED—Experienced burner for brick and drain tile plant with down-draft kilns. Address: 122-M, care of "Brick and Clay Record.' 122-3

"ONE INSERTION SATISFIED OUR PURPOSE"—that is what a Classified advertiser in the December fourth issue wrote us under date of the 12th. How is that for "quick" results? Are you in need of help?

WANTED—POSITIONS.

POSITION WANTED—The services of a responsible Ceramic Engineer are available to manufacturers of fire brick or other refractory ware. Prefer connection where investment may be made. Address: 11-T, care of "Brick and Clay Record." 11-1

WANTED—Position as superintendent by man with life-time experience in the manufacture of all kinds clay products. Understanding thoroly all kinds of machinery, kilns and fuel, and the successful handing of same. First-class handler of labor; gilt edge references. Address: 12-Supt., care of "Brick and Clay Record." 12-3P.

SUPERINTENDENT desires change. Paving block, fire-brick or hollow block plant with large capacity desired. Satisfactory references offered. Address: 122-D, care of "Brick and Clay Record." 122-TF

WANTED—EQUIPMENT

WANTED—Hardening cylinders 6 ft. or 6 ft. 6 in. in diameter. State condition and best price. Jackson & Church Co., Saginaw, Mich.

WANTED EQUIPMENT

One crusher.
One 9-ft. dry pan.
One large brick machine.
One large automatic cutter.
Two Richardson represses.

Please give detailed description, condition, location and lowest cash price. Lock Box 727, Uhrichsville, Ohio. 122-TF

WANTED—Conveyor rolls and equipment, suitable for 30-inch belt, A-1 condition. Full particulars in first letter. Sioux City Brick & Tile Company, Sioux City, Iowa. 12-1

WANTED—To purchase brick hand repress; about 4x12 inches. A. B. Marston, 320 Hibernia Building, New Orleans, La. 122-1

"WE HAVE LOCATED A NUMBER OF CARS AND WISH YOU TO DISCONTINUE OUR AD"—A Classified ad did the work for them quickly and at small cost. Perhaps you are in need of used equipment. If so, try a Want ad in "Brick and Clay Record."

FOR SALE—CLAYWORKING PLANTS.

FOR SALE OR RENT—to reliable potter—Grand Junction Pottery Plant, good location. Grand Junction Pottery Co., Grand Junction, Tenn. 122-1P

FOR SALE OR RENT—Two-kiln tile and hollow block plant in Southern Iowa. Albia Brick & Tile Company, Albia, Iowa. 122-1P

FOR SALE

Brick plant formerly of United States Sewer Pipe Company, located at Annabelle, in Lincoln District, Marion County, West Virginia, near Worthington, on 9.11 acres, with 10 foot vein of clay under 26 pieces of land, comprising 471 acres, subject to certain rights of way, etc., suitable for manufacture of high-grade building and paving brick.

Machine house, grinding room, four kilns—capacity 200,000 brick each, brick platforms, siding, etc.

For particulars apply to A. V. D. Watterson, Fidelity Building, Pittsburgh, Pa. 122-4

CLAY AND CLAY LANDS

FOR SALE—Large tract of fire-clay land in Southern Pennsylvania. Well-known vein, hard and soft clay; best in state. Good railroad facilities. Address: P. O. Box 584, Philadelphia, Pa. 82-9.

FOR SALE—SAND-LIME PLANTS

SAND-BRICK PLANT FOR SALE—Tube mill, dryer, lime grinder, elevators, conveyors, friction gear for pulling brick out of chamber, 22 brick cars. Manistee Brick Co., Manistee, Mich.

FOR SALE—SECOND-HAND MACHINERY.

FOR SALE—One horizontal high pressure boiler, 80 h. p., 60 in. by 16 ft., 52 4-inch flues, $\frac{7}{16}$-inch shell, butt welded, ½ front, with first-class fittings. This boiler is in first-class condition, guaranteed to stand 125 lbs. steam working pressure.

One Sturtevant 60-inch exhaust fan, right-handed, side inlet, top discharge.

One Gardner 3-inch standard, class A governor in good condition.

One Gardner Duplex boiler feed pump, 4 in. by. 2½ by 4, good working order.

One Atlas slide valve engine 15 h. p., flywheel drive face 10 by 46.

80 ft. 1$\frac{15}{16}$ cold roll shafting, common flat boxes, flange coupling.

A lot of one black unions, nipples, elbows, R-L and R Globe valves, 4 in. gate valve. 3 and 4 inch black pipe with cast elbows, nipples, etc.

One Mystic flue blower, one 6-inch Plaine steam whistle. Full particulars by mail. Gladbrook Pressed Brick & Tile Co., Gladbrook, Iowa. 122-TF

FOR SALE

On account of the city crowding the Warren Brick & Tile Company out of business, we have purchased their entire plant, and have for sale the following, all in excellent running order:

1 Buckeye clay digger, cut 24 in. wide, 4 ft. deep, electric drive, 220 volts, A. C.
1 American corrugated roll crusher.
2 winding drums.
1 American double-shaft clay feeder.
1 Rust clay feeder.
1 Freese combination brick and tile machine.
1 Belt conveyor, 50 ft. long.
3 Marsh pumps.
1 7½-h. p. motor, A. C.
130 single deck drier cars.
Tile cutting tables up to 12 in.
Miscellaneous articles necessary to a complete tile plant.

The Trumbull Clay Products Company, Warren, Ohio. 122-1

FOR SALE

All the brickmaking equipment of the Indiana Brick Company, Anderson, Ind., including 13-ton locomotive, rails, trucks, motors, belts, belt conveyors, blowers, pumps, hoists, etc., plant in full operation within 90 days. All machinery in fine condition, plant being dismantled and all equipment will be sold at low prices. If interested, write for detailed information to J. L. Moore, care Moore Mfg. Co., Muncie, Ind. 11-8

CHRISTMAS GIFTS IN MACHINERY

1 Frost 9 ft. and 1 American 8-ft. dry pan, both like new. 1 Model D3 4-mold and Model 599 6-mold dry press. Two 4-mold Boyd dry presses. 1 American 6-ft. blower fan. 1 24-in. smooth roll crusher. 1 20-in. disintegrator. 1 10-ft. pug mill. 1 Raymond 8-ft. wet pan. 1 Raymond hollow ware brick machine. 100 steel frame single deck dryer cars. Lot of rack cars. 5,000 flat gal. pallets. 2,000 rolled-edge pallets. Lot of rolled edge gal. pallets. C. H. Horton Company, Painesville, Ohio. 122-TF

FOR SALE—Hardening Cylinder 66 ft. 6 ins. long by 72 ins. diameter. 150 lb. pressure, one-half inch shell. Back head three-fourths inch dished. Heavy cast front head. Two rails running entire length. Triple rivetted butt strap joints and 1 inch rivets 2¾ inch spacing. Fine condition. Address: 122-A, care of "Brick and Clay Record." 122-1

Classified Advertisements

CHICAGO HOUSE WRECKING CO.

Offer the equipment of a modern brick and tile plant recently purchased, for immediate delivery.

ND-1	1	Wire cut brick table, capacity 80,000, 13 brick at a time, automatic.
ND-2	1	Pug mill, capacity 80,000, manufactured by H. Brewer Co.
ND-5	1	Tile machine; brand new; Fernholtz No. 32.
ND-34	1	Fernholtz brick press, No. 32; 4 moulds.
ND-73	95	Continental 4-yard 36-inch gauge, two-way Diamond frame dump cars.

STEAM SHOVELS

P-5	1	45-ton Bucyrus steam shovel, with 2½ yd. dipper; standard gauge.
C-1044	1	70-ton Bucyrus 8-wheel self-propelling steam shovel, standard gauge.
C-1064	1	Thew steam shovel, ¾-yd. dipper; full revolving traction type with independent crowding engine.
C-1071	1	Marion model 20 steam shovel; 1½ yd. dipper.

BUCKETS

C-1048	75	1¾ yd. Woods Acme bottom dump buckets, suitable for sand, clay, gravel, etc.

VALVES

C-6214	10,000	standard valves; Crane Co., Kelly-Jones Co., and Chapman Valve Co. makes. Foot valves, gate valves, angle valves, float valves, globe valves, and check valves.

BOILERS

C-5903	35	Horizontal tubular boilers, 54 to 72 inches diameter, 14 to 18 feet long.
C-5900	1	400 H. P. Atlas water tube boiler 125 lbs. pressure.
C-5901	1	250 H. P. Sterling water tube boiler 125 lbs. pressure

HOISTS

C-1051	1	10"x12" Lidgerwood double cyl. 3 drum hoisting engine.
E-351	1	7"x10" Mundy double cyl., double drum hoisting engine.
J-7	1	8"x10" double cylinder single drum hoisting engine.
C-483	2	42-inch single drum close mining hoists; direct connected to 40 H. P. 4 cylinder automobile type gas engine.

Ask for complete current stock list No. BC-304

Address **HARRIS BROTHERS CO.,** Owners
35th and Iron Sts. Chicago, Ill.

"As a result of our Classified Ad we received a bunch of inquiries and also a telegram asking for details. We feel very much indebted to 'Brick and Clay Record' Classified Department." We cover the industry so thoroly every other Tuesday that there is no delay in handling your order for one of these ads., Send it on for our New Year issue.

FOR SALE—One 66x33 inch New York blower with direct connected engine, about 15 h. p., and ¾ housing. Also one 75 h. p. Chandler & Taylor engine. All in first-class condition. A. C. Ochs Brick & Tile Co., Springfield, Minn. 11-2-3

FOR SALE—One Ceramic Engineering Company's disc clay feeder used two months, cheap. Address: 11-BA, care of "Brick and Clay Record." 11-2-3

GAS ENGINE
25 h. p., run 11 months.
Somerville Machine Works,
Somerville, Mass. 11-2-3

FOR SALE—New Ross Keller four-mold triple pressure brick press. Excelsior Tool & Machine Co., Manufacturers of Brick Presses and Pulverizers, East St. Louis, Ill. 11-TF

FOR SALE—Big lot of drier cars all styles, good as new. State your wants. Address: 11-BB, care of "Brick and Clay Record." 11-2-3

United Wrecking Co.

748 Brannan Street
San Francisco, Cal.

We have purchased several Brick Plants and have for sale:

180 Brick Cars (good as new)
2 American Clay Machinery Co.'s Auger Machines
2 American Clay Machinery Co.'s Auto. Cutting Tables
1 Disintegrator
7 Clay Dump Cars
1 Large Sturtevant Fan
1 Eagle Repress

DO YOU **WANT**
An Employee?
A Position?
To Buy Anything?

HAVE YOU **FOR SALE**
Used Machinery?
Land, Plant or
Anything Else?

"Brick and Clay Record"
Advertisements Bring Returns

Classified Advertisements

BUCKETS

1—1-yard Williams clam-shell.
1—1½-yard McMyler clam-shell.
1—1-yard Orange-Peel Bucket.
1—1-yard Page Drag-line Bucket.
1—2-yard Page Drag-line Bucket.

CRANES

1—15-ton 4-wheel Browning, 40' boom, 1½-yard bucket.

CRUSHERS

1—No. 3 Austin.
1—No. 5 McCully.
1—No. 3 Gates.
1—No. 5 Austin.
1—No. 4 Austin.

CARS

25—Koppel 36" gauge cars.
30—4-yard Western 36" gauge cars.
35—1½-yard Western 24" gauge cars.
30—2½-yard 36" gauge quarry cars.

LOCOMOTIVES

2—10x16 36" gauge dinkies, just through shop.
3—9x14 36" gauge, just overhauled.
1—7x12 24" gauge, almost new.
1—10x18 standard gauge dinky, fine.
2—19x24 6-wheel 50-ton switchers.

STEAM SHOVELS

1—Model 36 Marion, on Tractor.
1—Model 50 Marion, almost new, 2-yd. dipper.
1—No. 1 Thew Traction Shovel, 1¼-yard, first-class.
1—No. 0 Thew Shovel, first-class.
1—No. 2 Thew, on railroad trucks.
1—Keystone Excavator, almost new.

RAIL

200 tons 40-lb. good relayers, Chicago.
1200 tons 56-lb. good relayers, Chicago.

DRYERS

2—5'x50' Rotary Clay Dryers, New. Never erected.
1—6'x100', good condition.

BOILERS

2—300 H. P. Edgemoor Water Tube Boilers, 140-lb. pressure.
1—200 B. & W. Water Tube Boiler, 150-lb. pressure.
1—15 H. P. Firebox Boiler, 120-lb. pressure.
1—70 H. P. Firebox Boiler, 125-lb. pressure.
2—72x16 Tubular Boiler, 125-lb. pressure.
and others. Tell us what you need.

ENGINES

1—11x16 Erie Slide Valve, 60 H. P.
1—14x18 Buckeye Automatic, 100 H. P.
1—12x36 Allis Corliss, 100 H. P.
1—18x42 Allis Corliss, 200 H. P.
1—18 & 30x48 Vilter Cross Compound Corliss, 500 H. P., and others. Tell us what you need.

EXCAVATORS

1—Keystone Tractor for Excavator, 8 mos. old.
1—Monighan Dragline with 1-yd. bucket.
We have a large stock of all kinds of heaters, condensers, etc. Send for list.

George C. Marsh & Co., 711 Old Colony Bldg., Chicago

DRAG LINES

Lidgerwood, 60 ft. boom, 1½ yd., all steel.
Monighan, 60 ft. boom, 1½ yd., all steel.
Ready for immediate shipment.

MOORE BROS.
39 S. LaSalle Street, Chicago, Ill.

FOR SALE—Sand-Lime Brick Machinery.
1 Boyd press.
1 Simpson press.
1 dry pan.
Crushers.
Mixers.
Steaming tanks.
Cars, etc.

Also cement block machinery, including "Fisher" outfit for sills, caps and special blocks. Whitney Bros. Company, Superior, Wis. 122-1

DRIER

FOR SALE

Immediate shipment.

One American Clay Machinery Company direct heat rotary drier complete; shell 48"x40'. Address

HACKLEY MORRISON
RICHMOND, VA.

STEEL RAILS.

All sections, new and relaying, in stock for immediate shipment. Also FROGS, SWITCHES, SPIKES and BOLTS. We purchase old machinery, dismantle plants, and purchase scrap iron.

Let us know what you have to offer. Prices cheerfully quoted.

M. K. FRANK, Pittsburgh, Pa.

BETTER to read a dozen ads you are not interested in, than to miss one that would be of value to you.

A BIG OPPORTUNITY—Complete pulverizing and accelerating plant consisting of the following equipment:
1 steel building 60 ft. long by 40 ft. wide.
1 9-in. by 16-in. Climax crusher.
1 6 ft. by 40 ft. rotary fire dryer.
1 7 ft. dry pan (Bonnot).
1 36-in. Bonnot pulverizer.

Elevators, belts, counter shafting, scales, blowers, etc. All the above in first class running order. Can be loaded on cars K. D. Plant located near Baltimore, Md. Address: 11-B, care of "Brick and Clay Record." 11-10

FOR SALE—Two 4-mold Berg brick presses in good condition and ready to run. Address: 11-VSB care of "Brick and Clay Record." 11-6

FOR SALE—300 double deck dryer brick cars, 22 in. gauge. 600 grate bars 4 ft. long, 6 in. wide. A. R. Robinson, Birmingham, Ala. 11-4 11-TF

FOR SALE—Two American Clay, style F 9 ft. dry pans. In good condition and we can furnish new wearing parts for same. Address: 122-Pan, care of "Brick and Clay Record." 122-1

FOR SALE—No. 8 Gas Producer Vaporizer Top. Eight feet in diameter. Generates its own steam. In good, usable condition. CHARLES WARNER COMPANY, Wilmington, Delaware. 12-2P.

FOR SALE—Fifty single deck dryer cars, 24⅝ in. gauge, wood deck, roller bearing, first-class condition. Address: 11-H, care of "Brick and Clay Record." 11-4

FOR SALE—Madden auger machine No. 6D. Also an automatic cut-off. Fine condition. Thos. Phillips, 30 East Frambes Avenue, Columbus, Ohio. 12-2P.

FOR SALE—One second-hand engine in good repair, 150 h. p. Inquire The Crouse Clay Product Company, 613 Second National Bank Bldg., Akron, Ohio. 122-1

FOR SALE OR RENT

THEW STEAM SHOVEL

¾ yd. dipper, perfect condition, on standard gauge railroad wheels. Massachusetts boiler. Ready for immediate shipment from Detroit.

The Cleveland & Erie Machinery Co.
University & Scranton Roads
CLEVELAND, O.

PROPERLY REBUILT MACHINERY IN STOCK—Boilers: Stationary, firebox and vertical, all sizes, high and low pressure. ENGINES: Corliss, automatic, throttling, gas and gasoline. GENERATORS and MOTORS: All sizes and kinds. HEATERS, PUMPS, valves, pipe, belting, saw mills, woodworking and iron-working machinery. Sole manufacturers of the celebrated "LEADER" INJECTORS and EJECTORS. Send us your requirements. We can fill them. The Randle Machinery Co., 1733 Powers St., Cincinnati, O. 5-2-TF

PATENTS— Inventions

Protected. Trade Marks Registered. Patents Investigated
Established 1895

HUBERT E. PECK
635 F Street Washington, D. C.

We've got too much to advertise here, so we've issued
Bulletin 227
44 pages. Send for it! FREE!
ZELNICKER IN ST. LOUIS
Rails, Equipment, Machinery, Piling, Tanks

Refractories and Furnaces

By F. T. HAVARD, 356 pages, 6x9, fully illus., $4.00 (17s) net, postpaid.
Presents: I. Material collected during the author's activities as Superintendent of furnace operations in **America, England and Germany.**
II. A digest of the available information on the properties and preparation, sources and processes of manufacture of the materials.
III. A comprehensive study of the physical and chemical properties of furnace materials.

For Sale By
Brick and Clay Record
610 Federal Street, Chicago

SAY "I SAW IT IN BRICK AND CLAY RECORD"

BRICK and CLAY RECORD

Copyright 1917, by Kenfield-Leach Company

Entered as Second Class Matter January 2, 1911, at the Post Office, at Chicago, Ill., Under the Act of March 3, 1879.

Terms of Subscription
One Year—(26 Numbers)
United States......$3.00 Foreign............$4.00
Single Copies.......25c
Member of Associated Business Papers

Published Every Other
Tuesday by

Kenfield-Leach Company
610 Federal Street Chicago

Chicago, January 1, 1918

Vol. 52 No. 1

Leading Articles in This Issue

The Outlook for 1918........................28
Fundamental Principles of Combustion 32
Placing the Industry on a War Basis..36
Sewer Pipe Slabbing—Its Cause and Cure 39
Bridging the Gap from Pit to Plant..44
Firing Glazes 47
Splits 51
How to Report Net Incomes.............53
Rate Fundamentals and Tariff Interpretations 55

⁂

Special Departments

Machinery and Equipment..................78
Pottery Notes...72
Questions and Answers........................60
The Superintendent...........................57
Wake of the News...............................64

⁂

This Issue Contains Semi-Annual Index

American Clay Mach'y Co. 81, 82
American Pulverizer Co.. 16

Baird M. & Mfg. Co. ....Front Cover
Ball Engine Co.................... 69
Barber-Greene Co................ 74
Barrett Company................ 85
Beighlee Electric Co......... 65
Black Diamond.................... 78
Bonnot Co. 4
Boss Co., J. C.................... 61
Brewer & Co., H................101
Bristol Co.......................... 62
Broderick & Bascom......... 17
Brown Instrument Co....... 24
Buckeye Traction Ditcher Co 75

Canton Grate Co................ 68
Celite Products Co............. 61
Chambers Bros. Co........... 7
Chase Fdry. & Mfg. Co.... 92
Clarage Fan Co.................. 15
Classified Ads...........103, 105
Clay Products Section..86, 91
Cleveland Alloys Co......... 91
Cork Insert Co.................... 77
Crescent Belt Fastener...... 59
Cyclone Grate Bar Co...... 67

Didier-March Co................. 96
Drymore System.................. 66
Duplex Truck Co................ 67
Du Pont Powder Co........... 95

Englehard, Chas................. 94
Erie Steam Shovel Co........ 69
Exner, J. E.......................... 79

Fate Co., The J. D....106, 107
Federal Motor Truck Co.. 13
Freese & Co., E. M.......... 99

Gandy Belting Co.............. 73
Garnet Co........................... 91
General Electric Co........... 23
General Store..................... 91
Goodyear Tire & Rubber Co. 11

Hardinge Bros., Inc.......... 59
Harrington & King Perforating Co..................... 63
Harris Bros Co..................105
Hendrick Mfg Co................ 92
Hill Clutch Co.................... 59
Homestead Valve Mfg...... 91
Hydraulic-Press Brick Co. 89

Illinois Brick Co................ 87
International Clay Mchy. 8, 9

Jackson & Church Co...... 76

K-B Pulverizer Co............ 93
Keystone Driller Co.......... 66
Kissel Motor Car Co......... 70

Lakewood Engr. Co........... 95
Lincoln Electric Co........... 21
Link-Belt Company............ 22

Main Belting Co................ 5
Manufacturers Equipment 6
Marion Machine Fdry. & Supply Co...................... 60
Marsh & Co.......................104
Martinique Hotel............... 58
Morgan Co., F. W............ 58
Morse Chain Co................. 97

Ohio Filler & Shield Co.... 59
Ohio Galv. & Mfg Co...... 93
Orenstein-Arthur Koppel.. 93
Osgood Company.............. 92
Owens Continuous Tunnel Kiln Co 91

Philadelphia Textile Machinery Co...................... 10
Potts & Co., C. & A........ 20
Price Electric Co............... 60

Roessler & Hasslacher...... 61
Rollin Chemical Co.......... 68

Sanderson-Cyclone Drill.... 60
Sauerman Bros................... 58
Sawyer Belting Co............ 12
Scandinavia Belting Co.... 58
Schofield-Burkett 96
Smith Co., Claude............ 3
Standard Dry Kiln Co...... 64
Steele & Sons, J. C..........100
Stevenson Company.......... 18

Taylor Instrument Co...... 63
Thew Auto-Shovel Co...... 14
Thwing Instrument 64
Toronto Fdry. & Machine Co. 62
Trade Names......................83
Trautwein Dryer & Engineering Co...................... 3

Union Chain & Mfg. Co.... 65
United States Rubber Co.. 12
United Wrecking Co........105

Victor Balata & Textile Belting Co...................... 92

Wallace Mfg. Co.............. 98
Watt Mining Car Wheel....108
Webner, Frank E.............. 91
Webster & Kincaid............ 19
Weller Mfg. Co................. 2
Westinghouse Electric & Mfg. Co. 94
Williams & Co., C. K....... 58
Wood & Co., R. D.......... 71

Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

SEMI-ANNUAL INDEX

Vol. LI — Brick and Clay Record — July-December, 1917

July 3............ 1 to 92
July 17............ 93 to 184
July 31............185 to 276
August 14............277 to 368
August 28............369 to 460
September 11......461 to 552
September 25......553 to 644
October 9............645 to 736
October 23...... 737 to 820
November 6.... 821 to 910
November 20.. 911 to 998
December 4.... 999 to 1094
December 18..1095 to 1178

A

- Adams, Elmer H.:
  - Open Price Plan and the Law 1126
- Alabama:
  - Report on Clay Products for 1915... 336
- American Ceramic Society:
  - Have Booth at New York Chemical Show 481
  - Holds Profitable Summer Meeting.. 207
  - New York and Chicago Local Sections Formed 1023
  - Sets Date for Indianapolis Meeting.. 934
- American Face Brick Association:
  - French Lick Convention.......939-1114
  - Launches Promotion Plan.......572-761
  - Convention Roster 1118
- Apartments and Houses Scarce with Rents Rising..................... 890
- Ashes, Disposal of Kiln.................. 861

B

- Bass', George A., Presidential Address at Face Brick Meeting..........1119
- Bauer, Otto C.:
  - Knocking vs. Boosting............ 775
- Bauhahn, Rolf W.:
  - The Labor Factor in Setting Terra Cotta Kilns 309
- Bauxite Brick:
  - Their Properties and Constituents.. 211
- Bell, M. L., and C. E. Nesbitt:
  - Slag Tests for Refractory Brick Used in Iron and Steel Industry. 518
  - Suggested Improvements in the Manufacture of Silica Brick...... 127
- Belts:
  - Reviving "Dead" Belts............ 597
- Blair, Marion W.:
  - Labor and Fuel Cost—Its Relation to the Paving Brick Market.....1025
- **Bleininger, A. V.:**
  - Properties and Uses of Refractory Materials 945
- Bonus System Installed by Evens and Howard 857
- Brick:
  - American Yards to Figure in Rebuilding France.................. 665
  - Burning with Drain Tile.......... 51
  - War's Effect on Brick in Europe.... 756
- Brown, Ralph P.:
  - Strength of Monolithic Pavements as Affected by Brick's Physical Properties 838
- Brickmaking in Australia, by Allan F. Gulson 858
- Brick Pavements:
  - Brick's Physical Properties Effect on Monolithic Pavement, by Ralph P. Brown.................. 838
  - Cutting Breakage in Rolling....... 856
  - From Mud Hole to Highway....... 581
  - In Pennsylvania 704
  - Inspected by Western Paving Brick Association 857
  - John W. Sibley Speaks Favorably for 856
  - Kansas to Build Seventy Miles of Brick Road 596
  - New Akron-Cleveland Road Planned 513
  - Recent Developments in Foundations and Fillers for, by John S. Crandell, B. S., C. E.................. 132
  - Relative Merits of Concrete and Brick 959
  - Speed in Construction.............. 668
  - Wedded to Brick for Thirty Years. 313
- Brick Knockers' Club, by Joseph P. Sullivan 843
- Brick Paving and Making in Cleveland. 412
- Brick Roads Essential.................. 935
- Brick Roads for Army Cantonments...37-134
- Brick, the Building Material of the Ages, by A. F. Rosenheim.......1039
- Brick Wall Baffles Blaze............. 666
- Bureau of Mines Official Expresses Himself Concerning the Industry..400-504
- Bureau of Standards:
  - Urges Use of Waste Pottery Bisque 951
- Burner's Hut 1045
- Burning:
  - Brick and Tile in Down Draft Kilns 51
  - Method of Keeping Records........685
  - One Cause for Difference in........ 597
  - Proper Draft Conditions in Burning Kilns, by A. E. Williams.... 220
  - Salt Glazed Vitrified Hollow Ware, by S. C. Karzens............... 846
  - Using Clinkering Apron........... 413
  - Vitrification and Watersmoking Slabbing in Drain Tile.......... 942
  - Making It Trouble-Proof, by Otis L. Helfrich 584
- Bucket Elevator:
- Building:
  - In New York.................36-126-214-311-397-487-589-680-768-850-1120
- Building Success Upon the Ashes of Failure 1122
- Business Classification of Current Legal Decisions 325

C

- Cable Conveyor Makes Debut in East.. 587
- Canadian National Clay Products' Association:
  - Meeting in Toronto............... 762
- Cantonments:
  - Bricks Roads for?..............37-134
  - Sewer Pipe Used at Fort Riley.... 217
  - Spanish War Teaches Lesson...... 406
  - Trench Digging Under Way at Louisville 298
- Casting of Heavy Clay Ware, by Frank H. Riddle 1129
- Ceramic Society Holds Profitable Meeting 206
- Ceramic Student Essay Contest........ 296
- Charcoal as a Fuel....................1140
- Chemical Show at New York:
  - Ceramic Products Exhibit......706-774
- Chrome Brick:
  - Their Properties and Constituents. 211
- Clay Products Association Formed by Western Manufacturers.......... 583
- Clay Products Bureau Formed on Pacific Coast 297
- Clay Products in 1916 Show Twenty-Six Per Cent Increase........... 480
- Clays, Mixing Alluvial and Fire........ 783
- Clayworking in Venezuela.............. 308
- Cleveland Brickmaking and Paving.... 412
- Coal:
  - Conservation 521-1047
  - Heat Values of, Compared with Oil 416
  - Price Cut Is Welcome News........ 26
  - Results of Five-Year Government Test on Deterioration During Storage 781
- Coal Car, Passing of the Flat Bottom.. 956
- Coke as a Substitute for Coal.......... 956
- Concrete Pavements:
  - Relative Merits of Concrete and Brick 959
- Conventions Scheduled for 1917-1918...1036
- Corbett, H. R.:
  - Fire Insurance at Actual Cost by Means of Inter-Insurance........1035
- Cost Accounting:
  - What Does It Cost? by C. H. Scovell 579
- Cost of Making Fire Brick........ 597
- Crandell, John S.:
  - Recent Developments in Foundations and Fillers for Brick Pavements 132
- Crushing Clay Containing Niggerheads 48
- Cleveland—Mecca for Paving Brick Makers 662
- Cement—Burned Clay Brick Proposed. 673

D

- Deckman, Charles J., Resigns.......... 28
- Draft:
  - Affect on Burning................ 413
  - One Flue Gives Best Draft........ 780
  - Proper Conditions in Burning Kilns 220
- Drain Tile:
  - A Cushion for.................... 315
  - Advertisement 495-1031
  - Bureau Pushes Product in Iowa... 763
  - Burning with Brick.............. 51
  - Crack Badly in Drying..........48-235
  - Essential 1031
  - Hints for Laying.................. 845
  - Iowa Association Advertises......1031
  - Vitrification and Watersmoking Slabbing 942
- Dryer Car Switch..................... 45
- Dryers:
  - Attempt to Increase Efficiency by New Design 600
  - Choosing a Fan.................. 686
  - Monolithic Brick Slab Roof......... 679
  - Overcoming Cracking Caused in Dryer, by Otis L. Helfrich...... 123
  - Regulation by Use of Instruments.. 764
  - Some Suggestions in Construction. 861
  - Steam Pressure Recorded..........1045
  - Stopping "Sweating" in Drain Tile Sheds 1141
  - Using Old Boiler Tubes on........ 315
- Drying:
  - Drain Tile 48
  - Overcoming Cracking in........... 123
  - Tile Crack Badly................ 235
  - Using Hot Gases from Burning Kilns 672-885-1030
- Drying Floors for Fire Brick............233
- Dry Pan:
  - Device to Keep Clay in........... 44
  - Protecting Bearing with Leather Cap 44
- Dry Press Method of Manufacture Compared to Stiff-Mud, and Soft-Mud 293-602-958
- Dynamite Used in Solving Ditching Problem 861

E

- Eastern Illinois Clay Company......... 496
- Eastern Red Face Brick Association:
  - Meetings 219
- Editor's Corner 25-113-205-295-388-479-570-660-754-837-930-1020-1112
- **Edwards, Harlan H.:**
  - Monolithic Brick Slab for Dryer Roof 679
- Enlist for Service......................1119
- Essential and Non-Essential........... 932
- Europe, War's Effect on Brick in...... 756
- Explosive Law Defined............... 951

F

- Face Brick:
  - How to Create New Markets for, by G. C. Mars..................1132
  - Huge Promotion Fund Planned for Three-Year Campaign 572-761
- Face Brick Dealers' Association of America:
  - Report of French Lick Meeting....1117
- Fan For Dryers....................... 686
- Figgins, B. W.:
  - Talk Service 483
- Fire Brick:
  - Cost of Manufacture.............. 597
  - Dry Press and Stiff-Mud.......... 958
  - Drying Floors................... 233
  - Parting Materials 1137
  - Their Properties and Constituents.. 211
  - Wet-Pan vs. Pugmill for Soft-Mud Brick 417
- Fire Insurance at Actual Cost by Means of Inter-Insurance, by H. R. Corbett 1035
- Freezing, Effect on Pugged Clay........ 864
- Freight Items...........................27-121-401-407-481-620-773-1030
- Furnace Data for Kilns.............. 44

G

- Ganister, Production in 1916..........1032
- Gas Shortage in Ohio.............763-1065
- Gears and Pinions Maintenance........1138
- Goodman, Leon C., Appointed Army Captain 393
- Greenwood, G. W.:
  - A Fireside Argument.............. 852
  - A Rate Menu..................... 674
  - Analysis of Sales Plays a New Role 304
  - Barnes Stays on the Job.......... 215
  - Learns Something About Freight Rates 488
  - The Auditor Conducts a Performance with His Set of Trained Records 403

  - The General Manager Attends Another Rate Hearing.............. 591
  - The Sales Manager Sprouts a New Idea and Starts Something...... 118

H

- Hale, Sidney A.:
  - Rate Fundamentals and Tariff Interpretation 41-131-230-306-410-494-593-683-776-860-951-1041
- Helfrich, Otis L.:
  - Making the Bucket Elevator Trouble-Proof 584
  - Overcoming Cracking in Drying Clay Products 123
- Hollow Tile:
  - Farm Barn 33
  - Gets Valuable Publicity............ 497
- Hollow Tile Manufacturers' Association Makes Chicago Its Headquarters 120
- Hollow Tile Walls of the Ancients, by Harold V. Walsh................. 769

I

- Iowa College Man Wins Essay Prize... 296
- Instruments Used in Dryer Regulation. 764
- Interstate Commerce Commission Enters New Damage Field?............ 678

K

- Karzen, S. C.:
  - Salt Glazing Vitrified Hollow Ware. 846
  - Notes on Oxidation and Its Control.1028
- Kentucky Clay Products Association Organizes 222
- Kieselguhr Used in Insulating Kiln Crowns 955
- Kilns:
  - Choosing a Site For.............. 135
  - Claims One Flue Gives Best Draft. 780
  - Construction Under Cover.........1045
  - Foundation 1137
  - Furnace Data 44
  - Insulating Crowns 955
  - Reinforcing Bracing 779
  - Satisfactory Mortars for.......... 232
  - Support for Crown............... 863
  - Using Waste Heat from Continuous 234
- King, Matt:
  - Called to the Colors.............. 578
- Knocking:
  - Talk Service 483
  - The Brick Knockers' Club......... 843
  - Why Not Knock?................. 224
  - With Malice Toward None and Charity for All.................. 38
- Knocking vs. Boosting, by Otto C. Bauer 775

L

- Labor Factor in Setting Terra Cotta Kilns, by Rolf W. Bauhahn...... 309
- Labor and Fuel Cost—Its Relation to the Paving Brick Market, by Marion W. Blair...............1025
- Lease Accounts 588
- Letter Box 503-602
- Lime, Mixing with Red Burning Clay.. 865
- Limestone and "Popping"............ 499

M

- Macdonald, H. H., Leaves Paving Brick Association 938-1027
- Machinery and Equipment.......... ....70-154-255-339-437 -524 -623-709-797-885-974-1066-1153
- Magnesite Brick:
  - Their Properties and Constituents.. 211
- Manning, Van H.:
  - Expresses Himself Concerning the Clayworking Industry 400-504
- Market Conditions for Paving Brick in the Middle West, by G. W. Thurston 1033
- Mars, G. C.:
  - How to Create New Markets for Face Brick 1132
- Mining Methods:
  - Cheaper Method Wanted.......... 51
  - Systems Used in Mining........... 30
- Minnesota Clay Plant Made Successful.1122
- Missouri:
  - Report of Geological Survey....... 336
- Mitchell, Robert C., Resigns Position.. 121
- Mixing Clays 685
- Modern Clay Testing, by Arthur E. Williams 667-771
- Monolithic Brick Slab for Dryer Roof, by Harlan H. Edwards.......... 679
- Morris, George D.:
  - Notes on the Flow of Clay Thru Hollow Ware Dies.............. 778
- Motors, Advantages of Different Kinds. 864
- Motor Trucks:
  - Is Your Motor Truck an Asset or a Liability 842
  - Solving the Delivery Problem......1042
  - Utilized for Stock Moving......... 409

N

- National Brick Manufacturers' Assn.:
  - Meeting at Indianapolis.......... 762
- National Paving Brick Manufacturers' Assn.:
  - Convention at Cleveland.662-762-935-1027
- Nebraska Clayworkers in War Convention 1041
- Nesbitt, C. E., and M. L. Bell:
  - Slag Tests for Refractory Brick Used in Iron and Steel Industry. 518
  - Suggested Improvements in the Manufacture of Silica Brick..... 127
- New Jersey:
  - Clay Production in 1916............665
  - Fourth in Brickmaking............ 407
  - Summer Meeting 29
- Niggerheads Troublesome in Crushing.. 48
- Non-Essential Business 940
- Notes on the Flow of Clay Thru Hollow Ware Dies, by George D. Morris 778
- Notes on Oxidation and Its Control, by S. C. Karzen.....................1028

O

- Offbearing Belt:
  - For Drain Tile..................... 315
  - Reducing Loss at.................. 315
- Oil:
  - An Expensive Substitute for Coal..1140
  - Heat Value of, Compared with Coal 416
  - Storage House Construction........ 685
- Oiling System on Represses........... 863
- Open Price Plan and the Law, by Elmer H. Adams.................1126
- Oxidation:
  - Its Control, by Samuel C. Karzen..1028
  - Simple Explanation of Reactions... 135

P

- Paving Brick:
  - Market Conditions for, in the Middle West, by G. W. Thurston....1033
  - Relation Between Labor and Fuel Cost to Market, by Marion W. Blair 1025
  - Spending a Week at Illinois' Largest Plant 394-485
- Permanent Buildings Society:
  - Issue Booklet on Hollow Tile Garages 36
  - Organizes Western Drain Tile Association 851
- Podolsky, Harry C., Says Goodbye to Brick Industry 1121
- Porter, Charles R.:
  - "With Malice Toward None and Charity for All"............... 38
- Pottery Notes ....69-154-249 - 323 -426-514-614-700-794-878-1062
- Pottery:
  - Development of American Pottery.. 337
  - Gains Thirty Per Cent. in 1916..... 130
  - Imports and Exports............. 882
  - Industry at Syracuse Stimulated by War 493
- Practical Hints on the Burning of Salt Glazed Vitrified Hollow Ware, by S. C. Karzen.................... 846
- Preparing and Weathering Clays....... 594
- Proper Draft Conditions in Burning Kilns, by A. E. Williams........ 220
- Properties and Uses of Refractory Materials, by A. V. Bleininger...... 945
- Pugging Clay 597
- Pugmill, Incomplete Pugging in........ 780
- Pyrometers 685

Q

- Questions and Answers............... 48-234-416-600-782-864-958-1140

R

- Recent Developments in Foundations and Fillers for Brick Pavements, by John S. Crandell, B. S., C. E.. 132
- Refractory Brick Plant Built in Record Time 575
- Refractory Brick—Their Properties and Constituents 211
- Refractories:
  - Properties and Uses of Materials, by A. V. Bleininger............. 945
  - Slag Tests Used in Iron and Steel Industry 518
  - Tentative Methods for Ultimate Chemical Analysis 681
- Repress Oiling System................. 863
- Riddle, Frank H.:
  - Casting of Heavy Clay Ware......1129
- Roll Crushers, Theory of............. 499
- Rosenheim, A. F.:
  - Brick, the Building Material of the Ages 1039

S

- S. A. F. E. Holds Annual Outing...... 225
- Salt Glazing:
  - Burning Vitrified Hollow Ware, by S. C. Karzens.................. 846
  - Hints On 491
  - Unaffected by Free Silica.......... 780
- Sand and Gravel Washing Device...... 137
- Scovell, Clinton H.:
  - What Does It Cost?............... 579
- Scum:
  - Is It Due to These Causes?........ 413
- Sewer Pipe:
  - Association Issues Booklet 302
  - Exhibits 122
  - Practical Hints on the Burning of Salt Glazed Vitrified Hollow Ware, by S. C. Karzen........... 846
  - Spanish War Lessons Applied at New Camps 406
  - Tentative Specifications for Burned Clay Sewer Pipe................. 226
  - The Flow of Clay Thru Dies, by George D. Morris............... 778
  - Vitrification and Watersmoking Slabbing 942
- Short Course Scheduled at U. of I.....1041
- Sibley, John W., Speaks for Brick...... 856
- Silica Brick:
  - How to Prepare a Batch.......... 958
  - Suggested Improvements in the Manufacture of, by C. E. Nesbitt and M. L. Bell................. 127
  - Switching Face Brick Plant to.... 782
  - Their Properties and Constituents.. 211
- Silo Block 33
- Slag Tests for Refractory Brick Used in Iron and Steel Industry, by C. E. Nesbitt and M. L. Bell.......... 518
- Smith, A. V.:
  - Why Not Knock?................. 224
- Some New Light on An Old Problem, by Burton T. Sweely, B. S. in Cer. 299-399
- Southern Tile Association............28-883
- Specifications for Burned Clay Sewer Pipe 226
- Steam Coils Warm Machine Room..... 862
- Steam Shovel Operation.............. 597
- Steel Saved in Mill Construction....... 114
- Stoddard, Ralph P.:
  - Assumes New Task................ 577
- Straws that Show the Wind........... 47-151-330-408-516
- Streator Brick Co. Publishes Plant Newspaper 952
- Strength of Monolithic Pavements as Affected by Brick's Physical Properties, by Ralph P, Brown... 838
- Stripping Overburden 414
- Stull, R. T.:
  - Appointed Superintendent of Ceramic Experiment Station........312
  - Portrait 312
- Sturtevant, E. R.:
  - Portrait 120
- Suggested Improvements in the Manufacture of Silica Brick, by C. E. Nesbitt and M. L. Bell.......... 127
- Sullivan, Joseph P.:
  - The Brick Knockers' Club......... 843
- Superintendent ....44-135-231-315-413 - 499-597-695-778-861-955-1045-1137
- Sweely, Burton T.:
  - Portrait 297
  - Some New Light on An Old Problem 299-399

T

- Talk Service, by B. W. Figgins........ 483
- Tentative Methods for Ultimate Chemical Analysis of Refractories..... 681
- Terra Cotta:
  - The Labor Factor in Setting Kilns, by Rolf W. Bauhahn............ 309
- Testing Clay. by Arthur E. Williams.667-771
- Thermo-couples:
  - Removing the Brittleness from.... 413
- Thurston, G. W.:
  - Market Conditions for Paving Brick in the Middle West..............1033
- Tools, Keeping Track of............... 315
- Trade Acceptances, Inquiry by Federal Reserve Board 684
- Tyler, I. H.:
  - Portrait 223

U

- Using Hot Gases from Burning Kilns to Dry Clay Ware.......672-885-1030

V

- Venezuela:
  - Status of Clayworking in.......... 308
- Vitrification and Watersmoking Slabbing in Drain Tile and Sewer Pipe 942

W

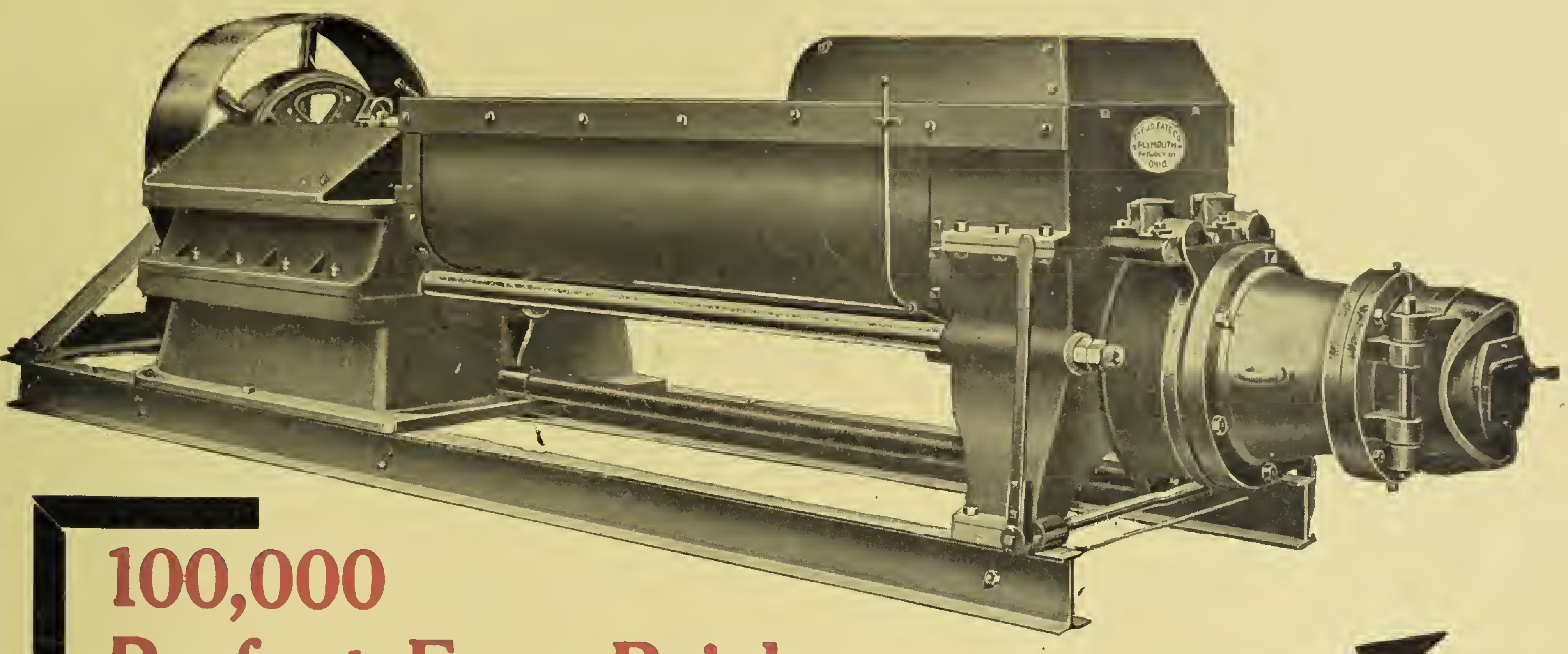
- Wake of the News......53-138-237-317-418 -505 -604-688-784-866-964-1048-1144
- Walsh, Harold V:
  - Hollow Tile Walls of the Ancients. 769
- War's Effect on Brick in Europe....... 756
- Washing Device for Sand and Gravel.. 137
- Waste Heat Used from a Continuous Kiln 234
- Weathering and Preparing Clay....... 594
- Wedded to Brick for Thirty Years..... 313
- Western Magnesite Association Formed. 219
- Wet-Pan vs. Pugmill for Soft-Mud Fire Brick 417
- What Are You Going to Do About It?. 932
- What Does It Cost?, by Clinton H. Scovell 579
- Why Not Knock?, by A. V. Smith..... 224
- Williams, Arthur E.:
  - Modern Clay Testing...........667-771
  - Proper Draft Conditions in Burning Kilns 220
- Wire Rope:
  - Maintenance 1138
- Wisconsin Clay Manufacturers' Association:
  - Convention at Milwaukee..........1032
- 'With Malice Toward None and Charity for All," by Charles R. Porter 38

The Outlook for 1918

AT THE CLOSE OF THE YEAR the clay products manufacturing industry finds itself in a more hopeful position than has prevailed for many months. The past twelvemonth has undoubtedly been one of unparalled uncertainty. Alternate joy and gloom, confidence and fear, good business and bad, comparatively easy production and then seemingly insurmountable obstacles to plant operation, have swept over the industry, making the conduct of the clay products business as much of a trial as any other industry. During the past few months disturbing action on the part of the government and disquieting rumors of what the future might hold have been productive of considerable apprehension. However, with the turn of the year the industry has assumed a more confident tone.

RAILROAD PROBLEM MEETS HAPPY SOLUTION

The taking over of the railroads by the United States has played a very important part in creating a reassurance among manufacturers engaged in the business of making all kinds of clay products. This step was a happy solution to numerous problems which confronted the carriers, the government and the public in the conduct not only of the war but America's business. While, of course, it is as yet too early to say just what effect the government's action will have upon a speedier restoration of order in transportation circles, it is predicted by good authorities that government control will eliminate much of the inefficiency which has existed in the transport of all kinds of materials. The railroads have admittedly increased their efficiency to a remarkable degree during the past three years, but further economies in operation and reduction of lost motion will be possible with all of the railroads operating as one gigantic system. In other words, the government should



100,000 Perfect Face Brick Per Day May Be Made on This Machine

Sixty thousand to one hundred thousand Face Brick per day can be made upon this up-to-date "Special Premier" Brick Machine, according to the condition of the clay and facilities of the plant, besides effecting a great saving in power, belting, and floor space over the separate machine and pug mill.

The Plymouth Pulling a Train of Ten Cars for the E. Biglow Co.

"Friction Drive Best For Clay Pits"

—Says E. O. Biglow

Among the many who declare The Plymouth Locomotive has solved the friction drive is President E. O. Biglow, of The E. Biglow Company, New London, O., who says it is one of the superior points of The Plymouth and with it he is enabled to pull ten loaded cars of one and one-half yards capacity—aggregating 46,000 pounds—every trip.

The Plymouth

Gasoline Industrial Locomotive

Is Equipped with Friction Drive Because—

1—It starts under heavy loads quicker. 2—It climbs steeper grades. 3—It has a limitless number of speeds, forward or reverse. 4—There is no waste energy. 5—It does not slip under heaviest loads. 6—It insures smooth running-motor without strain or stress. 7—It requires no lubricants. 8—The only wear is in the fiber wheel, which is good for several thousand miles. 9—It starts, stops and shifts noiselessly.

Mr. Biglow Proves These Points—He says:

"The Plymouth has solved the friction drive and there can be no consistent argument against it. We used one fiber rim four years There is no loss of power. It certainly takes less power and strain to start a load than with any other transmission. Cost of repairs on the friction drive are practically nil. As to the fuel cost, we are consuming five gallons of gasoline and three-fourths of a pint of lubricant per day."

We have a book that tells the complete story of the Biglow operations and of many other owners of Plymouths. It is also full of description, cost data and other valuable information about haulage problems similar to your own. A copy is yours for the asking—send for it today.

TEAR OFF AND MAIL THIS COUPON TODAY ☞

THE FATE

Special Premier Auger

Combined Brick Machine

This "Special Premier," with pug mill and auger combined, and having the Fate double pug shaft arrangement, is the second largest and heaviest of the Fate combined brick machines, yet it is heavier than the average brick machines in general use. The pugging tub has two pug shafts carrying knives which revolve toward each other and interwork, making the most thorough pugging device known.

The double pug shafts form a feature found only with Fate machines and the pugging capacity of a ten-foot double shaft pug mill has been found equal to twenty feet of a single shaft pug mill.

Immediately over the main cylinder of the machine the knives of the pug mill meet and interwork with the knives of the main auger shaft, forcing the clay down to the augers below, thus making a perfect force feed. The gears are of steel, running in oil in a dirt and dust-proof case. The journals are all on the outside of the pugging tub, the rear journals being inside the gear chamber, entirely protected from the action of the clay.

This machine is furnished with an iron friction pulley, with brass bushings, and should make from 140 to 160 revolutions a minute.

Fate Complete Equipment Makes Your Profit

Clay-Workers who are using the Fate line of clay-working machinery—from the pit to the finished product—are to he found in every part of the country. Let us send you the addresses of those nearest to you so you can investigate. You will find they are all profiting from the use of Fate Machinery.

SEND FOR OUR BOOKS—THEY'RE FULL OF PROOFS

We have a book brim full of interesting information about the entire line of Fate Clayworking Machines and devices, and whether you specialize in face brick or other clay products, this book is worth having.

The little story at the left tells of the best and most economical solution for your haulage system. You should get the book about that, also, if you have any kind of a haulage problem.

The J. D. Fate Co.

241 Riggs Avenue **Plymouth, Ohio**

Please send us without obligation on our part book checked
☐ "Clay Machinery," ☐ "Cutting Haulage Costs in Half."

Firm Name ....
Address ....
Town............ .... State.................

We Extend to You—the

Christmas Greetings

Of a new Equipment house

None could be better than the firms we represent. This is a partial list:

The Bonnot Company, Hettrick Mfg. Company, The Stevenson Company, American Pulverizer Company.

We have

MACHINERY

All kinds, but all of it the best. There may be better machinery made than is in our line, but we doubt it.

It includes fans, shovels, augers, track, cars, pans, belts, grease, etc., —and SERVICE.

We have a

KILN

It is a continuous type kiln, that in our opinion is better than anything else we know of. Logically, improvements and advancements are made —and this kiln is an improvement, we call it

Webster's Improved Continuous Kiln

—

About our machinery and about our kiln, and our will to do things right and our determination to give acceptable service—we'll tell you—just ask.

WEBSTER & KINCAID, 407 Greenwood Bldg., Cincinnati, O.

Consulting Clayworks Engineers. Dealers in all kinds of clay plant equipment.

UNIVERSITY OF ILLINOIS-URBANA
3 0112 051948732